Product Catalogue 2007

Wardson Limited 華俊有限公司

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NETREACH™ Remote Network Management

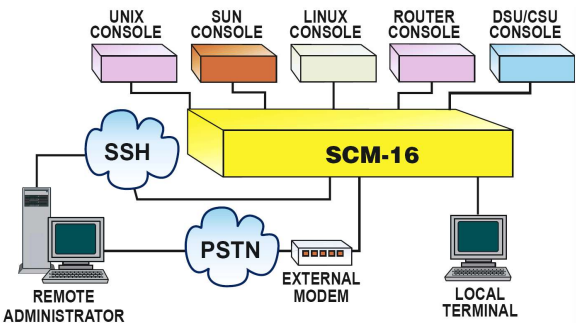
SSHv2 Secure Console Switch with Internal Modem

WTI

RSM-8

RSM-16

RSM-32



Model	
Part #	Description
RSM-8	SSHv2 Remote Site Manager with Internal Modem, 8-Port, SSHv2, Telnet, RS-232, 100/240V AC
RSM-16	SSHv2 Remote Site Manager with Internal Modem, 16-Port, SSHv2, Telnet, RS-232, 100/240V AC
RSM-16DC	SSHv2 Remote Site Manager with Internal Modem, 16-Port, SSHv2, Telnet, RS-232, -48V DC
RSM-32	SSHv2 Remote Site Manager with Internal Modem, 32-Port, SSHv2, Telnet, RS-232, 100/240V AC
RSM-32DC	SSHv2 Remote Site Manager with Internal Modem, 32-Port, SSHv2, Telnet, RS-232, -48V DC
RSM-23R	23" Rack Adapter Kit for RSM Series Units

Description

Applications

- Local or Remote Console Port Switching
- UNIX Serial Console Management
- TCP/IP, Dial-Up, SSH or Telnet Access to Consoles at Remote Locations
- Share Multiple Console Ports Using a Single VT100 Terminal or PC
- In-Band/Out-of-Band Network Management

The RSM Series Secure Consle Switches provide in-band and out-of-band access to RS-232 console ports and maintenance ports over network via SSH connections and simple menu-driven commands, or through a discrete TCP port connection mapped directly to one of the RSM's eight or sixteen serial outputs.

The RSM can also send buffered console messages via SYSLOG, as well as alert via SNMP when incoming console messages are captured. The RSM is ideal for allowing administrators to buffer console date collected in the RSM during non-connect periods, and/or to access console ports through out-of-band connections.

Intelligent Port Selection

Each port can be individually accessed by number, name or group via standard SSH sessions. The RSM alsoallows direct connections through discrete TCP port assignments mapped directly to a specified serial output. Ports can be individually control and many other operating parameters. The full matrix capability of the RSM allows any port to connect to any other port on the switch. Ports can also be connected or disconnected by a third party with supervisor rights. Configuration and Status screens display realtime port statistics and activity for one or all ports.

Data Capture Buffer

The "Buffer Mode" feature allows individual ports to capture and store incoming data. This "snapshot" of the last 256K of received data is stored in memory, and can be viewed, saved or erased by the systems operator at any time. Console messages, which are stored in the RSM port buffers, can be sent to a remote location via SYSLOG, or an SNMP trap can be generated to alert administrators when new console messages have been recorded. This is particularly useful in the event that "alarm error" or other critical data is sent from a specific console port during non-connect periods.

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western telematic inc.

NETREACH™ Remote Network Management

SSHv2 Secure Console Switch with Internal Modem

WTI

Features

- SSHv2 Encryption
- Secure Authentication: LDAP, RADIUS, and TACACS+
- SNMP Monitoring
- internal 56K V.92 Modem with Dial-Back
- HTTPS/SSL Secure Web Administration
- Available with 8, 16 or 32 RS-232 DB-9 Serial Ports
- 10/100Base-T Ethernet Port
- Command Logging with Audit Trail
- Non-Connect Port Buffering
- Time Stamp Port Buffering
- Co-Location Features
- Global Time Zone Support
- Multiple Concurrent SSH Sessions
- NTP for True Server Sync
- SYSLOG Messages
- IP Packet and Security Filtering
- No Unintentional Breaks
- 120/240 VAC or -48 VDC Models

Specifications

Network Interface	10/100Base-T Ethernet, RJ45
Internal Modem	56K , V.92
RS-232 Interface	Connectors: 8, 16 or 32 DB-9M connectors (DTE) Coding: 7/8 Bits, Even/Odd/No Parity, 1, 2 Stop Bits Flow Control: XON/XOFF, RTS/CTS, Both, None Rate: 300 bps to 115,200 bps
Timeout	"No Activity" Disconnects Port/Modem Session None, 1, 5, 15, 30, 90 min
Memory	Stores Parameters and Captured Data. 256K per Port
Break	Send Break or Inhibit Break
Site ID	32 Characters
Port Name	16 Characters per Port
Usernames & Passwords	16 Characters per Port (Case Sensitive)
Users	128 Maximum
LEDs	Power ON, Ready, Data Connection (18, 16 or 32)
Physical/Environment	Power: AC: IEC-320 Inlet, 100-240 VAC, 50/60 HZ, 5 Watts DC: Terminal Strip (#6-32), -48VDC, 0.2 Amp Max Size: RSM-8 & RSM-16 Hsight: 1.75" (4.4cm) 1RU Width: 19" (48.3cm) Depth: 6.5" (16.5cm) 19:(48.3cm) Rack Mounts Included Size: RSM-32 Hsight: 3.50" (8.8cm) 2RU Width: 19" (48.3cm) Depth: 6.5" (16.5cm) 19:(48.3cm) Rack Mounts Included Ship Weight: RSM-8 & RSM-16: 6lbs. (2.7 Kg) RSM-32: 12 lbs. (5.5 Kg) Operating Temperature: 32*F to 122*F (0*C to 50˚C) Storage Temperature: -4' to 158' F (-20* to 702˚C) Humidity: 10-90% RH

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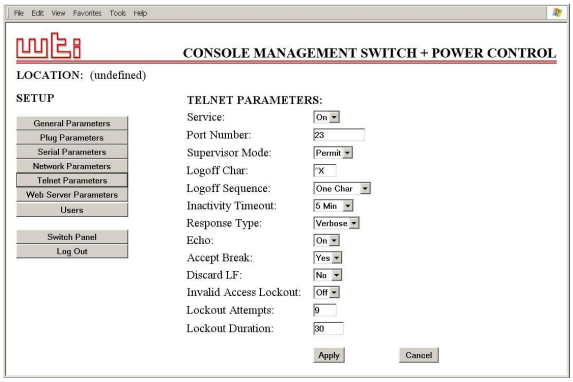
NETREACH™ Remote Network Management

Combination Console & Reboot Switch with Internal Modem

CMS-6R4

CMS-6R4-CE

Telnet Configuration Menu



Model	
Part #	Description
CMS-6R4	Six RS-232 Serial Console Ports, Four 120V AC Power Control Pirts, Internal Modem & Telnet Control
CMS-6R4-CE	Six RS-232 Serial Console Ports, Four 230V AC Power Control Pirts, Internal Modem & Telnet Control

Description

Applications

- Local or Remote Console Port Switching
- Remote Power Management and Control
- UNIX Serial Console Management
- Telnet or Dial-Up Access to Consoles at Remote Locations
- In-Band/Out-of-Band Network Management
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devices

The CMS-6R4 Unit is designed for remote network management installations where rack space is precious and only a few network elements are in the rack. The CMS-6R4 combines 6 RS232 Console ports with 4 Power reboot outlets and an internal 33.6Kbps Modem all in a 1U package. The Switch provides in-band and/or out-of-band access to RS232 console ports and maintenance ports on UNIX servers, routers and other network equipment. System Administrators can access remote device in order to change configuration parameters, connect users to restricted ports, collect buffered data, and perform Power On/Off/ Reboot and a variety of other administrative functions.

Intelligent Port Selection

Each port can be individually accessed by number, name or group via standard SSH sessions. The RSM alsoallows direct connections through discrete TCP port assignments mapped directly to a specified serial output. Ports can be individually control and many other operating parameters. The full matrix capability of the RSM allows any port to connect to any other port on the switch. Ports can also be connected or disconnected by a third party with supervisor rights. Configuration and Status screens display realtime port statistics and activity for one or all ports.

Power Control

Easy to use commands let you assign each of the four AC Power outlets plug names and view plug status. Outlets can be individually switched On, Off or Booted using plug numbers or names. For power sequencing, each plug can be assigned a power-up time and will wait for the selected duration before turning on the next plug.

Internal Modem

The internal 33.6 Kbps modem provides secure dial-in capability. A password feature prevents unauthorized access to sensitive command functions. Each menu-defined password can be assigned an individual User Name for easy reference and an optional Dial Back number, which instructs the unit to call the user at a predefined number before allowing access.

Capture Buffer

The "Buffer Mode" feature allows individual ports to capture and store incoming data. This "snapshot" of the last 32K of received data is stored in non-volatile memory, and can be viewed, saved or erased by the system administrator at any time. This is particularly useful in the event that alarm information or other critical data is sent to a specific port during non-connect periods.

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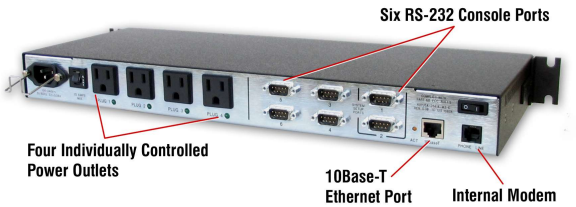
NETREACH™ Remote Network Management

Combination Console & Reboot Switch with Internal Modem

WTI

Features

- Six(6) RS-232 Console Ports
- Four(4) Individually Switched Power Outlets
- Internal Modem - 33.6K V.34
- Web Browser Access for Easy Setup and Operation
- Any-to-Any Port Switching
- 32K Data Collection Buffer on Each Port
- IP Security Features
- Up to Four Simultaneous Inbound Telnet Connections
- Dialback Security
- Invalid Access Lockout Feature
- On/Off/Reboot/Default Switching
- User-Defined Power-Up Default Status
- Power-Up Sequencing



Specifications

Network Interface	Network Port:Ethernet10Base-T, RJ45
RS-232 Interface	56K , V.92
RS-232 Interface	Connectors: Six (6) DB-9M Connectors (DTE Pinout) Coding: 7/8 Bits, Even/Odd/None Parity, 1, 2 Stop Bits Flow Control: XON/XOFF, RTS/CTS, Both, None Rate: 300 bps to 115,200 bps
Operation features	Timeouts: No-activity Disconnects Port/Modem Session;None, 2, 5, 15, 30 Minutes2, 5, 15, 30 Minutes Memory: Stores parameters and captured data,Non-volatile, 512K, Statically Allocated. Breaks: Pass Break or Inhibit Break Site ID: 32 Characters Port Names: 16 Characters LEDs: Power ON, Ready, Data Carrier, Network Activity, Data Activity (1-6), Plug On/Off (1-4)
Power	Model CMS-6R4 (120Vac) AC Input:IEC320-C14, 15 Total Amps Max. Voltage:100-120VAC 50/60Hz AC Output:Four (4) NEMA 5-15P,15Amps Max Model CMS-6R4-CE (220 Vac) AC Input:IEC320-C14, 10 Total Amps Max. Voltage:208-240VAC 50/60Hz AC Output:Four (4) IEC320-C13, 10Amps Max
Physical/Environment	Size: Height:1.75"(4.5cm)-One Rack U Depth:6.5"(16.5cm) Width:17.0"(43.2cm) 19"Rack Brackets Included Shipping Weight:Eight Pounds Operating Temperature:32˚F to 122˚F (0-50C) Humidty:10-90% RH
Agency Approvals	CMS-6R4:UL, cUL, FCC Class A, RoHS Compliant CMS-6R4-CE:UL, cUL, CE, FCC Class A, RoHS

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NETREACH™ Remote Network Management

APS-M Series 8/16-Port Intelligent Serial Port Management Switch with Internal Modem

APS-8M

APS-16M

Model	
Part #	Description
APS-8M	Out-of-Band, 7-Port RS-232 Serial, with Internal Modem
APS-8M-CE	Out-of-Band, 7-Port RS-232 Serial, with Internal Modem, -48V DC
APS-16M	Out-of-Band, 16-Port RS-232 Serial, with Internal Modem
APS-16M-CE	Out-of-Band, 16-Port RS-232 Serial, with Internal Modem, -48V DC

Description

Applications

- Out-of-Band Remote Network Management
- Remote Site RS-232 Port Switching
- Local or Remote Console/AUX Port Switching
- Share a Modem Line at Remote Sites
- Access RS-232 Control Ports from a Single Terminal

The APS-8M and APS-16M 8 or 16-Port Intelligent Serial Port Management Switches provide a convenient means for connecting multiple RS-232 devices for on-site and/or dial-up remote communications. High data throughput, a built-in 56K V.92 internal modem, and full modem and data flow control all add up to make the APS-8M/16M the perfect data switches for today's high speed communications applications.

Versatile Configuration Options

Each APS-8M/16M RS-232 port can be accessed by port number or by user-defined port name, and ports can be individually configured for data rate, parity and flow control. In addition, each port can also be password protected, and the APS-8M/16M's password directory allows definition of up to 32 distinct passwords.

Three Available Port Modes

APS-8M/16M RS-232 ports can be configured for one of three different operating modes: Modem Mode, Any-to-Any Mode or Buffer Mode.

- **Modem Mode:** This mode is used to manage and configure the APS-8M/16M's internal modem, and also allows any other APS-8M or APS-16M RS-232 port to be easily connected to an external modem. The APS-8M/16M supports all hardware control lines typically required by high speed modems.

- **Any-to-Any Mode:** Any-to-Any Mode employs the APS-8M/16M's full matrix capability to connect to any other free port on the switch, without the need to select matching communications parameters for the two connected ports. The Any-to-Any Mode is specifically designed for situations where you need to connect a modem, terminal server or local PC to other asynchronous control ports.

- **Buffer Mode:** A Port configured for Buffer Mode can be used to capture and store a "snapshot" of the last 32K of data received at that port. "Snapshot Data" is stored in non-volatile memory for later retrieval by the systems operator. This is particularly useful when you wish to collect important data or error messages sent to a port during non-connect periods.

Internal Modem

The internal 56 Kpbs V.92 Modem provides dial-in capability. User-defined passwords and a convenient dial-back security feature prevent unauthorized dial-in access to sensitive command functions. User-defined "AT" initialize and disconnect strings assure proper modem configuration and also provide the ability to reset an external modem (using the data timeout) in the event of line disconnection or session lock-up.

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NETREACH™ Remote Network Management

APS-M Series 8/16-Port Intelligent Serial Port Management Switch with Internal Modem

Features

- 19" Rack Mounted
- DB-9M DTE (COM Port) Interface
- Password Protection on Every Port
- Invalid Access Lockout Feature
- Up to 32 Different User Accounts
- Dialback Security
- 56K V.92 Internal Modem
- Any-to-Any Port Switching
- 32K Data Collection Buffer on Each Port
- Data Rate/Speed Conversion (300 to 115K)
- No Software Required (VT100-Type Terminal Controlled)
- Menu-Driven Set Up and Control Commands

Specifications	APS-8M	APS-16M
RS-232 Interface		
Interface: RS-232, Asynchronous, 7/8 bits, ASCII	a	a
Connectors: DB-9M, DTE Ports, Pinned as PC COM ports (Plus One RJ11 Modem Port)	8	16
Data Rate: 300 to 115.2K bps, Standard Rates (Port Specific)	a	a
Flow Control: XON/XOFF, RTS/CTS, Both or None (Port Specific)	a	a
Parity: Even, Odd, or None (Port Specific)	a	a
Stop Bits: 1 or 2 (Port Specific)	a	a
Signals Supported: TXD, RXD, CTS, RTS, DCD, DTR	a	a
Operation		
Internal Modem: Multi-Tech Format	33.6K, V.34	56K, V.92
Timeouts: No-activity Disconnect: 1, 5, 10, 15 Seconds, 1, 5, 15, 30 Minutes	a	a
Memory: Stores parameters and captured data. Non-volatile, 32K SRAM buffer memory per port.	a	a
Processor: Motorola 68EC000, 16 Bit, 12 MHZ	a	a
UARTS: 16C654 with FIFO and Flow Control	a	a
LEDs: Power ON, Ready, Data Activity	1-8	1-16
Power		
AC Model: Internal 115/230 VAC, 50/60 Hz, 10 Watts	a	a
DC Model: Terminal Strip, -48 VDC, 0.2 Amp Max.	a	a
Physical/Environment		
Size: 1.7" x 17.15" x 6.8" (H x W x D) (One Rack U)	a	a
Weight: 8 lbs. Shipping Weight Operating Temperature: 0*C to +45*C	a	a
Humidity: 10 to 90% RH	a	a
Agency Approvals		
UL, cUL, FCC Class A, RoHS Compliant	a	a

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MPC-20V

MPC-8H

MPC-16H

Model	
Part #	Description
MPC-8H-1	Managed Power Controller, Horizontal Format, 8-Outlets, NEMA 5-20R, 100-120 VAC
MPC-8H-2	Managed Power Controller, Horizontal Format, 8-Outlets, IEC 320-C13, 208-240 VAC
MPC-16H-1	Managed Power Controller, Horizontal Format, 16-Outlets, NEMA 5-20R, 100-120 VAC
MPC-16H-2	Managed Power Controller, Horizontal Format, 16-Outlets, IEC 320-C13, 208-240 VAC
MPC-20C-1	Managed Power Controller, Verticall Format, 20-Outlets, NEMA 5-20R, 100-120 VAC
MPC-20C-2	Managed Power Controller, Verticall Format, 20-Outlets, IEC 320-C13, 208-240 VAC

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Features

- Current/Voltage Threshold Sensing
- 8/16/20 Individual Switched Outlets
- Dual 20-Amp Power Circuits (40-Amp Max)
- User Definable Alarm Thresholds
- Alarm Notification via Email
- Ping-No-Answer Monitoring/Reboot
- Power Consumption Reports
- SSHv2 Encryption
- SSL Web Browser (Https) for Set Up and Operation
- LDAP & RADIUS Authentication
- Command Logging with Audit Trail

Features

- SNMP Control (v1,v2c, v3)
- 100Base-T Ethernet Port
- Easy-to-Use Menu/Commands
- On/Off/Reboot/Default Switching
- Timed On/Off/Reboot Switching
- User-Defined Power-Up Default Status
- Power-Up Sequencing
- Plug Grouping for Dual Power Supplies
- Four AUX Ports - Allows Control of Up to 80 Outlets via One Interface
- Various Input CAble Styles Available - Order Separately

Description

Applications

WTI's new MPC-Series Managed Power Controllers allow secure power management of rack mount equipment via web browser, telnet, external modem or local terminal. The MPC can monitor power to your equipment and automatically notify you when changes in current levels, temperature, circuit breaker status or other factors exceed user-defined threshold values. Power at each outlet can be remotely switched On/Off individually, as a group for dual power supply servers or with a time delay. Total power usage on each circuit can be graphically displayed to show spikes or drops in current , voltage and temperature.

Power Monitoring and Notification

The MPC constantly monitors current, temperature levels and circuit breaker status at your network equipment rack. If the MPC detects that user defined thresholds for these values have been exceeded, the unit can promptly notify you via email, SNMP, Syslog, text message, LED or audible alarm. In addition, the MPC can also notify you when it detects a ping-no-answer, when the Invalid Access Lockout has been triggered, or when a loss of communication with the optional auxiliary units is detected. The MPC can also record current fluctuations to a convenient log file, which can be retrieved in either XML, CVS format or displayed graphically via the unit's web interface.

Security and Co-Location Features

Secure Shell (SSHv2) encryption and address-specific IP security masks prevent unauthorized access to command and configuration functions. The MPC also provides two different levels of user security; the Supervisor level and the Non-Supervisor level. The Supervisor level provides complete access to all plug functions, operating features and configuration menus. The Non-Supervisor level is ideal for co-location applications, since users are only permitted to view status and connect to the plugs allowed by their user name and password. The MPC also features SSL security for the web interface; allowing up to five simultaneous SSL web browser sessions. SSH protects the text interface. The MPC includes full Radius support, LDAP capability, DHCP and an invalid access lockout feature. An Audit Trail feature records all user access, login and logout times and command actions.

Convenient, Durable Design

The MPC features two separate power circuits and can support up to 40 Amps per unit. 120 VAC models include NEMA 5-20R outlets and 240 VAC models include IEC320-C13 outlets. The MPC is also available with an optional remote front panel, which can be used to display the status of MPC units that are installed in hard-to-reach spots within equipment racks. Each MPC unit can also be used to control up to three additional units via a serial RJ45 link.

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Specifications	MPC-8H	MPC-16H	MPC-20V
Control Ports			
Ethernet Port: 10/100Base-T Ethernet, RJ45	a	a	a
Console Port: DB9M, RS232C	a	a	a
RS232 Coding: Serial ASCII, 7/8 Bits, 300-38.4 Kbps	a	a	a
AUX/Link Ports: RJ11	a	a	a
Description			
Voltage: 100/120VAC & 208/240VAC Models	a	a	a
AC Inputs & Connectors (2): 16 and 20 Amp IEC320-C20 Models	a	a	a
AC Output Total: 32 and 40 Amp Models	a	a	a
AC Output - Receptacles: NEMA 5-20R and IEC320-C13 Models	(8)	(16)	(20)
Physical/Environment			
Dimensions: 1.75" (4.5cm) High (One Rack U) 17" (43.2cm) Wide 19" (48.3cm) Wide with Rack Mount Kit (Included) 8.7" (22.1cm) Deep	a		
Dimensions: 3.5" (8.9cm) High (Two Rack U) 17" (43.2cm) Wide 19" (48.3cm) Wide with Rack Mount Kit (Included) 8.7" (22.1cm) Deep		a	
Dimensions: 31" (78.7cm) High (Zero Rack U) 4.5" (11.4cm) Wide 3.0" (22.1cm) Deep			a
Operating Temperature: 32*F to 122*F (0*C to 50*C)	a	a	a
Humidity: 10 to 90% RH	a	a	a
Agency Approvals			
UL, FCC, RoHS Compliant	a	a	a

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NETREACH™ Remote Network Management

IPS Series Internet Power Switches for Remote Power Management (Horizontal)

IPS-800

IPS-1600-D20

Model	Output Receptacles	Voltage	Dual Output	Total Output	Input Panel	Regulatory
IIPS-400	(4)NEMA 5-15R	120V	Single 15 Amp	15 Amps	IEC320-C14	UL
IPS-400-CE	(4)IEC320-C13	240V	Single 10 Amps	10 Amps	IEC320-C14	CE
IPS-800	(8)NEMA 5-15R	120V	15 Amps	30 Amps	IEC320-C14	UL
IPS-800-D20	(8)NEMA 5-15R	120V	20 Amps	40 Amps	IEC320-C20	UL
IPS-800E-D20	(8)IEC320-C13	208V	20 Amps	40 Amps	IEC320-C20	UL
IPS-800-CE	(8)IEC320-C13	230V	10 Amps	20 Amps	IEC320-C14	CE
IPS-800CE-D16	(8)IEC320-C13	230V	16 Amps	32 Amps	IEC320-C20	CE
IPS-1600	(16)NEMA 5-15R	120V	15 Amps	30 Amps	IEC320-C14	UL
IPS-1600-D20	(16)NEMA 5-15R	120V	20 Amps	40 Amps	IEC320-C20	UL
IPS-1600E-D20	(16)IEC320-C13	208V	20 Amps	40 Amps	IEC320-C20	UL
IPS-1600-CE	(16)IEC320-C13	230V	10 Amps	20 Amps	IEC320-C14	CE
IPS-1600CE-D16	(16)IEC320-C13	230V	16 Amps	32 Amps	IEC320-C20	CE

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NETREACH™ Remote Network Management

IPS Series Internet Power Switches for Remote Power Management (Horizontal)

Features

- Dual Power Circuits: Up to 20 Amp Models Total Up to 40-Amps Maximum Load
- 8 or 16 Individual Switched Outlets
- Web Browser Access for Easy Setup and Operation
- On / Off / Reboot / Default Switching
- User-Defined Power-Up Default Status
- IP Addressed, 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing
- Manual Power Control Button
- Various Input Cable Styles Available - Order Separately

Description

Applications

- Control Power on any 120, 208, or 230 VAC Powered Device via Internet, Web Browser, Telnet, Modem or Local Terminal
- Remote Power Management and Control
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devicesl

IPS Series

Servers, routers, and other electronic equipment sometimes "lock-up," often requiring a service call to a remote site just to flip the power switch to perform a simple reboot. IPS-Series Remote Power Management Switches give you the ability to perform this function from anywhere; just point your browser to the IP address of any IPS-Series unit, enter the secure user name and password, and you're just a click away from remote power On, Off or Reboot!

Two Convenient User Interfaces

The IPS provides two convenient methods for accessing configuration and switching functions; The Web Browser Interface and the Command Line Interface.

The Web Browser Interface consists of a series of simple, easy-to-use web page menus that allow you to select configuration parameters or initiate switching operations using your TCP/IP network and a JavaScript enabled web browser.

The Command Line Interface is an ASCII menu system, which allows you to configure and operate the IPS via telnet over TCP/IP network, via modem connection or via local PC using a terminal program such as Hyperterminal or TeraTerm.

Security and Co-Location Features

Access to the IPS command mode is password protected to prevent unauthorized users from invoking sensitive switching and configuration functions. Both the Web Browser Interface and Command Line Interface require the user to enter a password before allowing access. Telnet control can be user-defined to a discrete TCP port, or completely turned off to ensure that no unprotected port is present.

The IPS also features two different levels of operational passwords; the System Administrator Level and the User Level. The System Level provides access to all configuration and switching functions, while the User Level is limited to switching functions only. Each outlet can have a unique User Level password, and each user can either be allowed to control all plugs, or restricted to specific plugs selected by the Administrator.

Easy to Configure, Easy to Use

The IPS can be configured via network, via modem, or locally via the serial console port. Easy to master, user-friendly menus and commands let you assign a location name, set system parameters and view plug status. Outlets can be switched on, off, rebooted or set to user-defined default status using plug numbers or names.

Reliability and Support

The IPS is built in the USA and backed by a five year warranty. NetReach products are installed in thousands of network sites world wide. Our customers know they can depend on WTI for superior quality and reliability for their most mission-critical operations.

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E-mail: info@wardsonlimited.com

NETREACH™ Remote Network Management

IPS Series Internet Power Switches for Remote Power Management (Horizontal)

IPS-400

IPS-400-CE

Specifications	IPS-400	IPS-400-CE
Interface Descriptions		
Network Interface: 10Base-T Ethernet, RJ45l	a	a
Console/Modem Port Interface		
Connectors: DB-9M, RS232C, (DTE Pinout)	1	1
Coding: Serial ASCII, 8 Bits, No Parity	a	a
Power		
Voltage: 120VAC, 208/240VAC, 50/60Hz	120V	208/240V
AC Input: 10 Amps, 15 Amps	15 Amps	10 Amps
AC Input - Connector: IEC320-C14	1	1
AC Output: 10 Amps, 15 Amps	15 Amps	10 Amps
AC Output - Receptacles: NEMA 5-15 Outlets	4	
IEC320-C13		4
Physical/Environment		
Dimensions: 1.75" (4.5cm) High 19" (48.3cm) Wide 4.5" (11.3cm) Deep	a	a
Weight: 6 lbs. Shipping Weight	a	a
Operating Temperature: 32*F to 122*F (0*C to 50*C)	a	a
Humidity: 10 to 90% RH	a	a
Agency Approvals		
UL, cUL, FCC Class A, RoHS Compliant	a	
UL, cUL, CE, FCC Class A, RoHS Compliant		a

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NETREACH™ Remote Network Management

IPS Series Internet Power Switches for Remote Power Management (Horizontal)

IPS-800

IPS-800-D20

IPS-800E-D20

IPS-800-CE

IPS-800CE-D16

Specifications IPS-	800	800-D20	800E-D20	800-CE	800CE-D16
Interface Descriptions					
Network Interface: 10Base-T Ethernet, RJ45I	a	a	a	a	a
Console/Modem Port Interface					
Connectors: DB-9M, RS232C, (DTE Pinout)	1	1	1	1	1
Coding: Serial ASCII, 7/8 Bits, No Parity	a	a	a	a	a
Power					
Voltage: 120VAC, 100/240VAC, 208/240VAC (50/60Hz)	120v	120v	100/240v	208/240v	100/240v
AC Inputs & Connectors (2) 10 Amps, 15 Amps, 20 Amps, 16 Amps IEC320-C14, IEC320-C20	(2) 15A IEC-C14	(2) 20A IEC-C20	(2) 20A IEC-C20	(2) 10A IEC-C14	(2) 16A IEC-C20
AC Output Total: 20 Amps, 30 Amps, 32 Amps, 40 Amps	30A	40A	40A	20A	32A
AC Output - Receptacles (8): NEMA 5-15, IEC320-C13	(8) NEMA 5-15	(8) NEMA 5-15	(8) IEC-C13	(8) IEC-C13	(8) IEC-C13
AC Output - Per Receptacle: Amps/Watts	3.75/ 450W	5A 600W	5A 1200W	2.5A 600W	4A 960W
Physical/Environment					
Dimensions: 1.75" (4.5cm) High (One Rack U) 17.5" (44.5cm) Wide 19" (48.3cm) Wide with Rack Mount Kit (Included) 7" (17.8cm) Deep	a	a	a	a	a
Weight: 10 lbs. (4.5 Kg) Shipping Weight	a	a	a	a	a
Operating Temperature: 32*F to 122*F (0*C to 50*C)	a	a	a	a	a
Humidity: 10 to 90% RH	a	a	a	a	a
Agency Approvals					
UL, cUL, FCC Class A, RoHS Compliant	a	a	a		
UL, cUL, CE, FCC Class A, RoHS Compliant				a	
CE, RoHS Compliant					a

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NETREACH™ Remote Network Management

IPS Series Internet Power Switches for Remote Power Management (Horizontal)

IPS-1600

IPS-1800-D20

IPS-1600E-D20

IPS-1600-CE

IPS-1600CE-D16

Specifications IPS-	1600	1600-D20	1600E-D20	1600-CE	1600CE-D16
Interface Descriptions					
Network Interface: 10Base-T Ethernet, RJ45I	a	a	a	a	a
Console/Modem Port Interface					
Connectors: DB-9M, RS232C, (DTE Pinout)	1	1	1	1	1
Coding: Serial ASCII, 7/8 Bits, No Parity	a	a	a	a	a
Power					
Voltage: 120VAC, 100/240VAC, 208/240VAC (50/60Hz)	120v	120v	100/240v	208/240v	100/240v
AC Inputs & Connectors (2) 10 Amps, 15 Amps, 20 Amps, 16 Amps IEC320-C14, IEC320-C20	(2) 15A IEC-C14	(2) 20A IEC-C20	(2) 20A IEC-C20	(2) 10A IEC-C14	(2) 16A IEC-C20
AC Output Total: 20 Amps, 30 Amps, 32 Amps, 40 Amps	30A	40A	40A	20A	32A
AC Output - Receptacles (8): NEMA 5-15, IEC320-C13	(16) NEMA 5-15	(16) NEMA 5-15	(16) IEC-C13	(16) IEC-C13	(16) IEC-C13
AC Output - Per Receptacle: Amps/Watts	1.875A 225W	2.5A 300W	2.5A 600W	1.25A 300W	2A 480W
Physical/Environment					
Dimensions: 3.5" (8.9cm) High (Two Rack U) 17.5" (44.5cm) Wide 19" (48.3cm) Wide with Rack Mount Kit (Included) 7" (17.8cm) Depth	a	a	a	a	a
Weight: 12 lbs. (5.5 Kg) Shipping Weight	a	a	a	a	a
Operating Temperature: 32*F to 122*F (0*C to 50*C)	a	a	a	a	a
Humidity: 10 to 90% RH	a	a	a	a	a
Agency Approvals					
UL, cUL, FCC Class A, RoHS Compliant	a	a	a		
UL, cUL, CE, FCC Class A, RoHS Compliant				a	
CE, RoHS Compliant					a

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NBB Series Network Boot Bars for Remote Power Management (Vertical)

Model	Output Receptacles	Voltage	Dual Output	Total Output	Input Panel	Regulatory
NBB-1600	(16)NEMA 5-15R	120V	15 Amps	30 Amps	IEC320-C14	UL
NBB-1600-D20	(16)NEMA 5-15R	120V	20 Amps	430 Amps	IEC320-C20	UL
NBB-1600E-D20	(16)IEC320-C13	208V	20 Amps	40 Amps	IEC320-C20	UL
NBB-1600-CE	(16)IEC320-C13	230V	10 Amps	20 Amps	IEC320-C14	CE
NBB-1600CE-D16	(16)IEC320-C13	230V	16 Amps	32 Amps	IEC320-C20	CE

Safety Retainer Design

Features

- Dual Power Circuits: Up to 20 Amp Models Total Up to 40-Amps Maximum Load
- 8 or 16 Individual Switched Outlets
- Web Browser Access for Easy Setup and Operation
- On / Off / Reboot / Default Switching
- User-Defined Power-Up Default Status
- IP Addressed, 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing
- Manual Power Control Button
- Various Input Cable Styles Available - Order Separately

Description

Applications

- Control Power on any 120, 208, or 230 VAC Powered Device via Internet, Web Browser, Telnet, Modem or Local Terminal
- Remote Power Management and Control
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devices

NBB Series

Servers, routers, and other electronic equipment sometimes "lock-up," often requiring a service call to a remote site just to flip the power switch to perform a simple reboot. NBB-Series Remote Power Management Switches give you the ability to perform this function from anywhere; just point your browser to the IP address of any IPS-Series unit, enter the secure user name and password, and you're just a click away from remote power On, Off or Reboot!

Two Convenient User Interfaces

The IPS provides two convenient methods for accessing configuration and switching functions; The Web Browser Interface and the Command Line Interface.

The Web Browser Interface consists of a series of simple, easy-to-use web page menus that allow you to select configuration parameters or initiate switching operations using your TCP/IP network and a JavaScript enabled web browser.

The Command Line Interface is an ASCII menu system, which allows you to configure and operate the IPS via telnet over TCP/IP network, via modem connection or via local PC using a terminal program such as Hyperterminal or TeraTerm.

Security and Co-Location Features

Access to the IPS command mode is password protected to prevent unauthorized users from invoking sensitive switching and configuration functions. Both the Web Browser Interface and Command Line Interface require the user to enter a password before allowing access. Telnet control can be user-defined to a discrete TCP port, or completely turned off to ensure that no unprotected port is present.

The IPS also features two different levels of operational passwords; the System Administrator Level and the User Level. The System Level provides access to all configuration and switching functions, while the User Level is limited to switching functions only. Each outlet can have a unique User Level password, and each user can either be allowed to control all plugs, or restricted to specific plugs selected by the Administrator.

Easy to Configure, Easy to Use

The IPS can be configured via network, via modem, or locally via the serial console port. Easy to master, user-friendly menus and commands let you assign a location name, set system parameters and view plug status. Outlets can be switched on, off, rebooted or set to user-defined default status using plug numbers or names.

Reliability and Support

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NBB Series Network Boot Bars for Remote Power Management (Vertical)

NBB-1600

NBB-1600-D20

NBB-1600E-D20

NBB-1600-CE

NBB-1600CE-D16

Specifications NBB-	1600	1600-D20	1600E-D20	1600-CE	1600CE-D16
Interface Descriptions					
Network Interface: 10Base-T Ethernet, RJ45I	a	a	a	a	a
Console/Modem Port Interface					
Connectors: DB-9M, RS232C, (DTE Pinout)	1	1	1	1	1
Coding: Serial ASCII, 7/8 Bits, No Parity	a	a	a	a	a
Power					
Voltage: 120VAC, 100/240VAC, 208/240VAC (50/60Hz)	120v	120v	100/240v	105/240v	100/240v
AC Inputs & Connectors (2) 10 Amps, 15 Amps, 20 Amps, 16 Amps IEC320-C14, IEC320-C20	(2) 15A IEC-C14	(2) 20A IEC-C20	(2) 20A IEC-C20	(2) 10A IEC-C14	(2) 16A IEC-C20
AC Output Total: 20 Amps, 30 Amps, 32 Amps, 40 Amps	30A	40A	40A	20A	32A
AC Output - Receptacles (16) NEMA 5-15, IEC320-C13	(16) NEMA 5-15	(16) NEMA 5-15	(16) IEC-C13	(16) IEC-C13	(16) IEC-C13
AC Output - Per Receptacle: Amps/Watts	1.875A 225W	2.5A 300W	2.5A 600W	1.25A 300W	2A 480W
Physical/Environment					
Dimensions: 43.75" (111.1cm) Length (Zero U Mount) 3.00" (7.6cm) Depth 1.75" (4.5cm) Width	a			a	
Dimensions: 44.5" (113cm) Length (Zero U Mount) 3.00" (7.6cm) Depth 2.125" (5.4cm) Width		a	a		a
Weight: 12 lbs. (5.5 Kg) Shipping Weight	a	a	a	a	a
Operating Temperature: 32*F to 122*F (0*C to 50*C)	a	a	a	a	a
Humidity: 10 to 90% RH	a	a	a	a	a
Agency Approvals					
UL, cUL, FCC Class A, RoHS Compliant	a	a	a		
UL, cUL, CE, FCC Class A, RoHS Compliant				a	
CE, RoHS Compliant					a

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WTI

Control Power on Any AC Powered Device ...
Via Web Browser, Telnet, Modem or Local Terminal !

NBB-230

Model	
Part #	Description
NBB-115	Single 15 - Amp Input, 120V AC, 5 - Outlets, NEMA 5 -15
NBB-230	Single 15 - Amp Input, 230V AC, 5 - Outlets, IEC320 - C13

Description

Applications

- Remote Power Management and Control
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devices

Servers, routers, and other electronic equipment sometimes "lock-up," often requiring a service call to a remote site just to flip the power switch to perform a simple reboot. The NBB-230 Network Boot Bar gives you the ability to perform this function from anywhere; just point your browser to the NBB-230's IP address, enter the secure password, and you're just a click away from remote power control.

Two Convenient User Interfaces

The NBB-230 provides two convenient methods for accessing configuration and switching functions; The Web Browser Interface and the Command Line Interface. The Web Browser Interface consists of a series of simple, easy-to-use web page menus that allow you to select configuration parameters or initiate switching operations using your TCP/IP network and a JavaScript enabled web browser. The Command Line Interface is an ASCII command line menu system, which allows you to configure and operate the NBB-230 via Telnet over TCP/IP network, via modem connection, or via local PC using a terminal program such as Hyperterminal or TeraTerm.

Security Features

Access to the NBB-230 command mode is password protected to prevent unauthorized users from gaining access to sensitive switching and configuration functions. Both the Web Browser Interface and Command Line Interface require the user to enter a password before allowing access.

Passwords transmitted via web browser use basic , 64 bit encryption techniques to ensure that passwords remain protected, and access to your equipment remains secure. Telnet Control can be defined to a discrete TCP port, or turned off to ensure that no unprotected port is present.

Easy to Configure, Easy to Use

The NBB features two different levels of operational passwords: the System Administrator Level and the User Level. The System Level provides access to all configuration and switching functions, while the User Level is limited to switching functions only, and can be restricted to specific plugs based on the password entered at log in.

Easy to use commands let you assign Plug names, set system parameters and view plug status. Outlets can be switched On, Off or Booted using plug numbers or names. For Power Sequencing, each plug can be assigned a power-up time value, and will wait for the selected duration before applying power to the next plug.

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NETREACH™ Remote Network Management

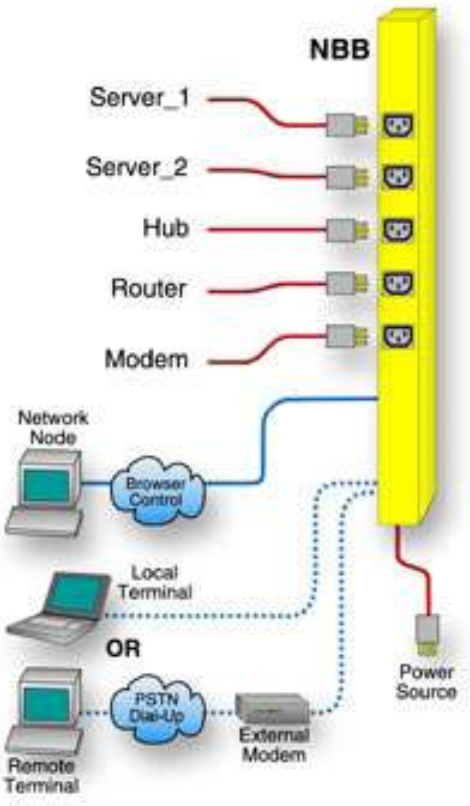
Web Browser Based "Zero U" Power Reboot Bar

Features

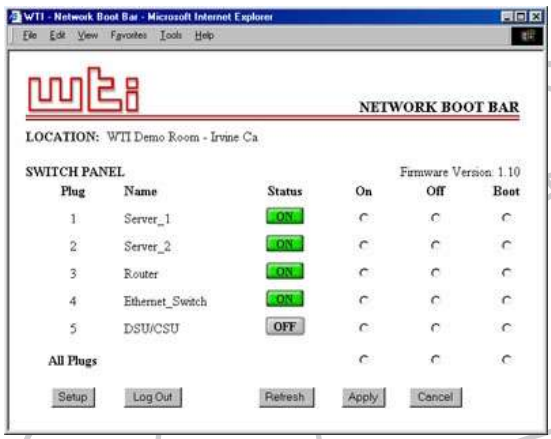
- Web Browser Access for Easy Setup and Operation
- Encrypted Password Security
- Five (5) Individual Outlets
- Each Outlet can Switch up to a 10 Amp Load
- On / Off / Reboot Switching
- IP Addressed, 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing
- Manual Power Control Button

Specifications

Power Input/Output	NBB-230 (230 VAC)
AC Input	205 - 240 VAC, 50/60 Hz, 10 Amps Max.
Connector	IEC-320 Inlet
AC Outputs	Five (5), 205 - 240 VAC, 50/60 Hz, 10 Amps Max.
Connector	IEC 320-C13
Load	10 Amps Total
Console/Modem Port Interface	Connector: DB9M, RS232C, DTE 256K per Port Coding: Serial ASCII, 8 Bits, No Parity
Physical / Environmental	Size: Length: 21.25" (54.0 cm) Depth: 3.00" (7.6 cm) Width: 1.75" (4.5 cm) Weight: 6 Lbs. Shipping Weight Operating Temperature: 32˚F to 122˚F (0˚C to 50˚C)
Humidity	10 - 90% RH



Web Browser Interface


WTI - Network Boot Bar - Microsoft Internet Explorer
File Edit View Favorites Tools Help
NETWORK BOOT BAR
LOCATION: WTI Demo Room - Irvine Ca
SWITCH PANEL
Firmware Version: 1.10
Plug Name Status On Off Boot
1 Server_1 ON
2 Server_2 ON
3 Router ON
4 Ethernet_Switch ON
5 DSU/CSU OFF
All Plugs
Setup Log Out Refresh Apply Cancel

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NETREACH™ Remote Network Management

Telnet and Dial-Up -48V DC Power Switch

Remote
Power Control
For High Amperage
Switches and
Routers!

RPC-4840N

Model

Part #	Description
RPC-4840N	Network Power Switch, Dual 40 Amp Circuits, -48V DC

Description

Electronic equipment sometimes "locks-up", requiring a service call just to flip the power switch to do a simple reboot. The Telnet Power Switch gives you the ability to perform this function from anywhere on the LAN/WAN, or if the network is down, to simply dial-in from a modem for out-of-band control.

Intelligent Power Control

The RPC can communicate over any TCP/IP network using standard Telnet, or out-of-band using an external modem and basic VT100 type terminal emulation. Each outlet can be assigned an individual password, device name, reboot delay time and unique power-up default state.

Reliability and Support

The RPC is built in the USA and backed by a two year factory warranty. NetReach™ products are installed in thousands of network sites world wide. Our customers know they can depend on superior quality and reliability for their most mission-critical operations.

Security Features

Address-Specific IP security masks prevent unauthorized sources accessing the RPC menu through the network. The RPC provides two levels of operational passwords; the system administrator level, which allows access to all configuration and switching functions, and the user level which only allows switching of assigned plugs.

Easy to Configure, Easy to Use

The RPC can be configured over the network, via modem or locally via the console port. Easy to use commands let you assign a location name, set system parameters and view plug status. Outlets can be switched On, Off or Booted using plug numbers or names.

Features

- Dual -48V DC 40 Amp Circuits
- On/Off/Reboot Switching
- Integral 10Base-T Interface
- RS232 Modem and Console Ports
- Outlet-Specific Password Security
- Network Security Features

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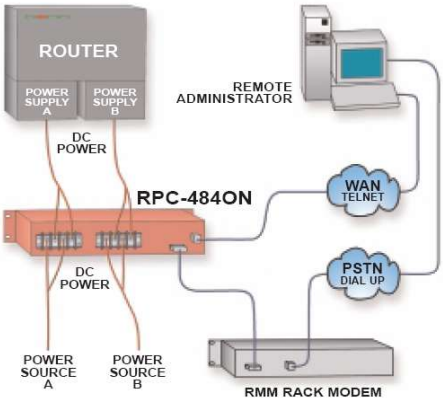
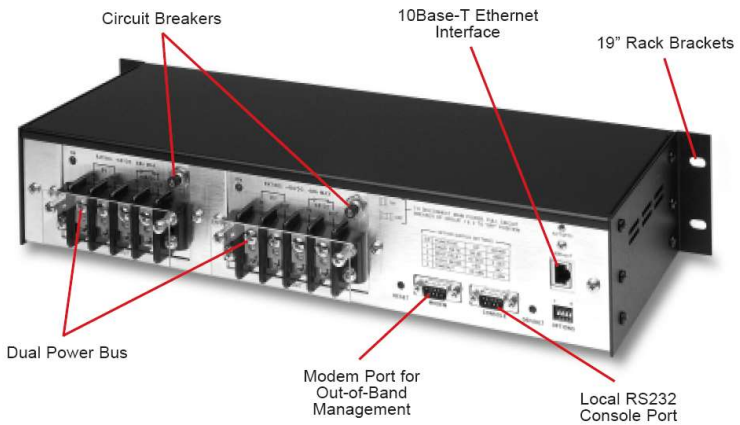
NETREACH™ Remote Network Management

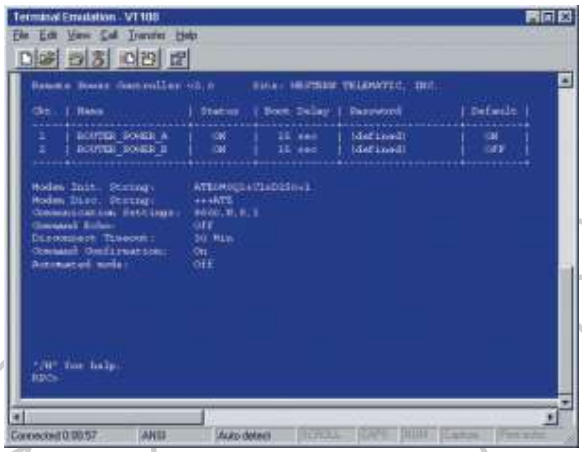
Telnet and Dial-Up -48V DC Power Switch



Specifications	
Power Input/Output	RPC-4840N (-48V DC)
DC Inputs	Two (2) Bus A & B
Voltage	-48V DC
Connector	Block (2) #8 Screws
Load	40 Amps Each Bus
Console/Modem Port Interface	Connector: DB9M, RS232C, DTE Coding: Serial ASCII, 8 Bits, No Parity
Physical / Environmental	LED Indicators: ON, RDY, RXD, Outlet ON (1- 2) Size: 3.5"H x 19"W x 7.5"D - (2RU) Weight: 10 Lbs. Shipping Weight Operating Temperature: 32˚F to 122˚F Humidity: 10 - 90% RH, Non-Condensing
Model Identification:	RPC-4840N: Network Power Switch



Administrator Status Display



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NETREACH™ Remote Network Management

Web Browser Based -48V DC Power Switch

Control Power on Any -48 VDC Powered Device ... Via Web Browser, Telnet,Modem or Local Terminal!

RPC-4850-8N

Model	
Part #	Description
RPC-4850-8N	Dual 50-Amp Inputs, 8-Output @ 15 Amp ea., -48V DC

Description

Applications

- Remote Power Management and Control
- Reboot Servers, Routers, Web Cams, Firewalls and Other Remote Devices

Servers, routers, and other electronic equipment sometimes"lock-up," often requiring a service call to a remote site just to flip the power switch to perform a simple reboot. The RPC-4850-8N Heavy Duty DC Power Switch gives you the ability to perform this function from anywhere; just point your browser to the RPC's IP address, enter the secure password, and you' re just a click away from remote power control!

Two Convenient User Interfaces

The RPC-4850-8N provides two convenient methods for accessing configuration and control switching functions; The Web Browser Interface and the Command Line Interface. The Web Browser Interface consists of a series of simple, easy-to-use menus that allow you to select configuration parameters or initiate switching operations using your TCP/IP network and a JavaScript enabled web browser. The Command Line Interface is an ASCII menu system, which allows you to configure and operate the RPC via telnet over TCP/IP network, via external modem connection or via local PC using a terminal program such as Hyperterminal or TeraTerm.

Security Features

Access to command mode is password protected to prevent unauthorized users from invoking sensitive switching and configuration functions. Both the Web Browser Interface and Command Line Interface require the user to enter a password before allowing access. Passwords transmitted via web browser use 64-bit encryption techniques to ensure that passwords remain protected and access to your equipment remains secure. Telnet and HTTP control can be user-defined to a discrete TCP port, or completely turned off to ensure that no unprotected port is present.

Features

- Dual -48 VDC, 50 Amp Input Bus
- Web Browser Access for Easy Setup and Operation
- Encrypted Password Security
- Eight (8) Individual Circuits
- Each Circuit can Switch a 15 Amp Load
- On / Off / Reboot Switching
- IP Addressed 10Base-T Interface
- RS232 Modem / Console Port
- Network Security Features
- Power-Up Sequencing

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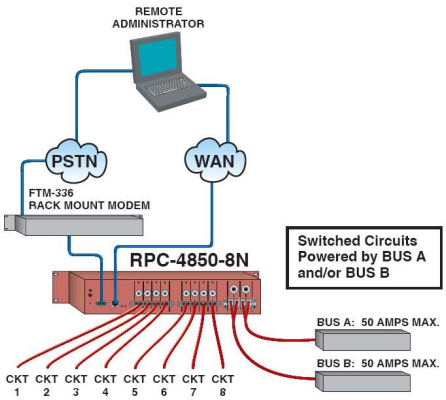
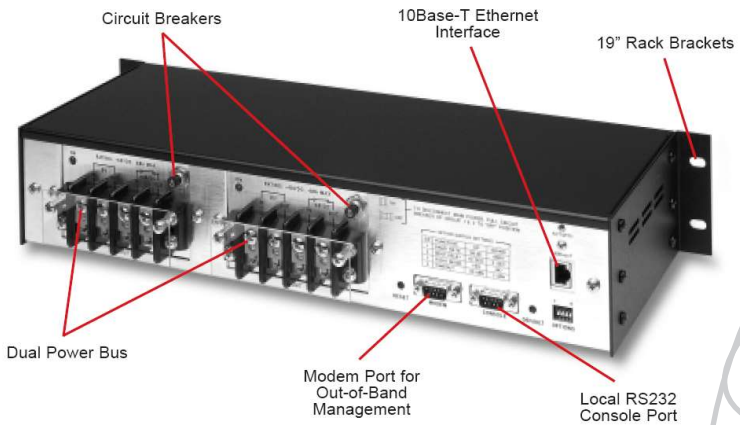
NETREACH™ Remote Network Management

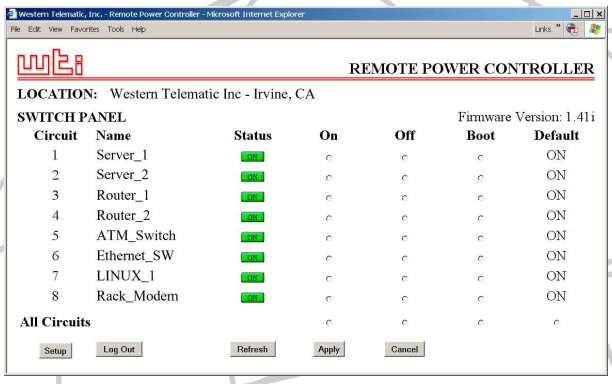
Web Browser Based -48V DC Power Switch



Specifications	
Power Input/Output	Voltage: -48 VDC
DC Inputs	Two; Bus A and/or Bus B 50-Amps Max. per Bus
Connector	Terminal Block, #10 Screws
DC Output Circuits:	Eight (8)
Connector	Load: 15 Amps Max (Total for Circuits One through Eight not to exceed 50 Amps.)
Control Ports	Network Port: Ethernet, 10Base-T Console / Modem Port: DB9M, RS232C, DTE RS232 Coding: Serial ASCII, 7/8 Bits, No Parity, 300 - 38,4 Kbps.
Physical / Environmental	LED Indicators: ON, RDY, RXD, Outlet ON (1- 8) Size: Height: 3.5" (8.9 cm) (2 RU) Width: 19.0" (48.3 cm) Depth: 9.5" (24.1 cm) Weight: 13 Lbs. (5.9 Kg) Shipping Weight Operating Temperature: 32˚F to 149˚F (0˚C to 65˚C) Humidity: 10 - 90% RH, Non-Condensing
Model Identification	RPC-4850-8N: Heavy Duty DC Network Power Switch



System Status Screen



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SRM-100 DC

Model

Part #	Description
SRM-100 AC	Secure. Dial-Back Rack Modem w/ Audit Tail, 115/230 VAC
SRM-100 DC	Secure. Dial-Back Rack Modem w/ Audit Tail, -48 VAC, NEBS L3 Compliant
SRM-23R	23" Rack Adapter Kit for SRM-100 Units

Description

Applications

- Secure, Dial-Up Access to Equipment Bays
- Remote Console/AUX Port Management
- Use with NetReach Series Multiport Console Switches for Out-of-Band Network Management

SRM-100

The SRM-100 Secure Rack Modem provides password-protected, dial-in access to rack mounted serial communications equipment. The SRM's non-volatile memory can store up to 100 menu-defined passwords, each with an optional dial back number. The unit can also track access activity for each password and create a log record of successful and unsuccessful connection attempts.

Password Protected Access

Each menu-defined password can be assigned an individual User Name for easy reference, and an optional Dial Back number, which instructs the unit to call the user at a predefined number before allowing access to the secure device. A separate System Password restricts access to the SRM Command Mode. This allows the system administrator to contact the unit via modem in order to change parameters or check access activity.

Access Activity Logs

The SRM-100 provides two convenient ways to track access activity; the Connection Log and the Password Directory. The Connection Log lists the 100 most recent connection attempts, along with the password entered, port used, time, date, call duration, and status at disconnect. The Password Directory displays all user names, passwords, and dial back numbers, and also lists the number of times that each password has been used. The Connection Log and Password Directory can only be viewed by the System Administrator; callers who log on with a User Password are not allowed to view these screens.

Local or Remote Configuration

All configuration tasks are performed via the SRM's command mode. The command mode features a series of command-driven configuration menus, which are used to select port parameters, define passwords and dialback numbers, and review connection activity. The command mode can be accessed locally via a serial DB9 Console Port, or remotely via dial-up connection. This makes remote installation a breeze. Simply plug in the power and phone line, and the system administrator can call the SRM and download all parameters, either by keystroke or ASCII file.

In addition to allowing command mode access by a local system administrator, the SRM's Console Port can also be connected to a secondary serial device, such as a reboot switch. Although most dial-in users are only allowed to access the primary device connected to the SRM modem port, a remote administrator can also access a secondary device connected to the console port in order to initiate reboot operations or take equipment off-line.

AC and DC Powered Models

The SRM-100 is available in both 115/230 VAC powered models and -48 VDC powered models. The AC version features a self adjusting power supply for 115/230 volt AC operation at 50/60 Hz. The -48 volt DC version is ideal for remote locations where AC power may not be available. The DC version features a dual bus terminal block assembly, allowing easy connection to a back-up power source.

Local or Remote Configuration

AThe SRM-100 provides three distinct operating modes:

User Mode: Provides password protected access to the secure device connected to the SRM's serial modem port.

Command Mode: Provides password protected access to the SRM command menus, which are used to define passwords and select configuration parameters. When accessed via modem, the command mode also allows access to an optional secondary device installed at the SRM console port.

Unsecured Mode: If necessary, the SRM's security features can also be disabled. When security is disabled, the SRM will function like a normal, unsecured, rack modem; callers are allowed to access the secure device without entering a password.

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NETREACH™ Remote Network Management

Secure Rack-Modem

Features

- Dial-Back Security
- Up to 100 Individual Passwords
- Audit Trail Log
- Real-Time Clock for Accurate Tracking of Connect Time and Call Duration
- Remotely Configurable
- Password-Protected Command Mode
- AC and -48V DC Power Options
- Powers Up to Specified Answer Rings and Baud Rate
- Standard "AT" 33.6K bps Modem
- Watch-Dog Timer and "No-Activity" Reset
- Nonvolatile Parameter and Data Storage

Specifications	SRM-100
Modem Port	
Interface: DB-25F, DCE, RS-232C	a
Rate: 300 to 38,400 bps; All Standard Rates.	a
Buffer: 32K	a
Flow Control: None, RTS/CTS, XON/XOFF, Both	a
Rings to Answer: 1 to 32 Rings	a
No-Activity Timeout: 1 to 30 Minutes	a
Console Port	
Interface: DB-9M, DTE, RS-232C	a
System Password: 16 Characters, Case-Sensitive	a
Operation Features	
Compatibility: ITU-T V.22bis (2400 bps) to ITU-T V.34+ (33.6K bps) Bell 212/V.22, 103/V.21, NEBS Level 3	a
Command Set: Connexant Chipset Industry Standard "AT" Commands.	a
Supports: V.42/MNP 2-4 Error Control V.42bis/MNP 5 Data Compression	a
Site ID: 32 Characters	a
LEDs: On, Ready, Pass, DCD, RXD, TXD, RTS, CTS, DTR	a
Password Directory	
Passwords Allowed: Up to 100	a
Passwords Field: 16 Characters, Case Sensitive	a
Dial Back Field: Up to 32 Digits	
Power	
AC Model: 115/230 VAC, 50/60 Hz, 10 Watts	a
DC Model: Dual -48 VDC Inputs, 0.1 Amp Max.	a
Physical/Environment	
Size: 1.75" x 19.0" x 6.0" (H x W x D) (One Rack U)	a
Weight: 5 lbs. Shipping Weight	a
Operating Temperature: 0*C to 34*C	a
Humidity: 10 to 90% RH, Non-Condensing	a
Agency Approvals	
UL, cUL, FCC Class A, RoHS Compliant	a

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Cable Fault Locator

Multi-Function Cable Fault Locator

NCM-1000

Metallic cable test instrument

- MTDR (Metallic Time-Domain Reflectometer)
- RFL (Resistance Fault Locator)
- Capacitance measurement
- Measuring DC voltage & resistance

Model

Part #	Description
NCM-1000	non

Description

Applications

NanoTronix's Multi-function cable fault locator (Model No.: NCM-1000) is anexcellent and highly accurate hand-held measuring instrument to check any problem and distance to the event on the cable by using 3 different cable testing methods: MTDR (Metallic Time-Domain Reflectometer), RFL (Resistance Fault Locator) and Capacitance measurement. It also provides additional two functions, found in DMMs (Digital Multi-Meters), measuring DC voltage and resistance.

MTDR function is basic testing method to see where the fault is occurred, which is ideal for use on installation, maintenance or fault finding (complete open & short, partial open & short, loading coils, loose connection, broken lines etc..) along with any type of metallic cables such as Telephone line, Coaxial cables, UTP cables, CATV, CCTV, Coaxial cables & Power cable whatever consists of at least 2 metallic conductors.

RFL function figures out the total length, distance to resistance happened , resistance measurement along with the cable via Murray loop testing method.

The cable length or distance to open circuit point in case of extremely long cable up to 100km can be carried out with Capacitance function by selecting exact capacitance value per unit length of cable being tested.

NCM-1000 performs all the measurement process automatically and displays the results in the graphic and tabular forms through a color graphic TFT LCD screen with 640x480 pixel resolution. The instrument design allows the user to easily determine the conditions of the cable being measured.

NCM-1000 is an excellent instrument for the cable installation, maintenance, repair after fault finding regardless of the cable installation environment

Features

- TDR mode
- Bridge mode
- Capacitance mode
- Voltage mode
- Resistance mode
- Easy to use, Lightweight and compact
- 6.4" TFT Color LCD display
- RS232C upload port
- CD indicator for battery time
- Selectable auto-off time
- Waveform trace and diagnosis
- Rugged and waterproof packing
- Optional spare battery double operating time
- PC software for further analyzing, reporting and printing

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Specifications

Metallic specifications (MTDR mode)	Measurement range	Coax. : 3.2m ~ 20,000m (10.4ft ~ 65,000ft)
	*Maximum testable cable length will vary with pulse width and cable type	
	Maximum display resolution	10cm (Variable up to 50m)
	Accuracy	0.1m±0.1% of reading for Coax.
	*Accuracy will vary with VOP of cable being tested	
	Test mode	L1, L1&M, L1-M, M
	Pulse width	5ns, 15ns, 45ns, 100ns, 200ns, 500ns, 1μs, 2 μs, 5μs, 10μs
	Maximum storage capacity	100 waveforms
	Output impedance	Automatic output impedance control of 25, 50, 75, 100, 125, 150Ω
	nput bandwidth	300MHz
	Effective sampling rate	1GS/s
	Gain	0 to 66dB or better, maximum sensitivity 1mV (full scale)
	Screen update rate	Maximum 3 times per second
	VOP (PVF)	Variable from 30.0 to 99.9% (in 0.1% step) V : 90 to 300m/μs V/2 : 45 to 150m/μs
RFL	Maximum loop resistance	10kΩ
	Loop resistance	1Ω
	Maximum insulation resistance	20MΩ
	Insulation resistance resolution	10kΩ
	Distance accuracy	1%
	Distance resistance	1m
	Insulation resistance accuracy	5%
Capacitance	Maximum capacitance	20μs
	Resolution and accuracy	

Range	Resolution	Accuracy
-10nF	100pF	3%
-1uF	10F	5%
-20uF	100F	10%

Distance Resolution	1m
Voltage	DC
Maximum Voltage	300V DC
Resolution and accuracy	

Range	Resolution	Accuracy
-10V	10mV	1%±0.5V
-50V	100mV	2%
-300V	1V	3%

Resistance	Maximum Resistance: 100MΩ
Resolution and accuracy	

Range	Resolution	Accuracy
-10kΩ	10Ω	1%±10Ω
-100kΩ	100Ω	1%
-1MΩ	1kΩ	3%
-10MΩ	10Ω	5%
-100MΩ	100Ω	5%

General specifications	Display type	6.4" Color TFT LCD
	Internal memory	2MB
	Communication port	RS-232C compatible (1 start bit, 8 data bits, 1 stop bit, no parity and 38,400 baud rate)
	Power supply	7.6V Li-ion chargeable battery pack 8800mAh / AC adapter
	Battery life	7 hours (extendable up to 14 hours by using extra spare battery)
	Recharging time	6 hours
	Operating temperature	-15 C ~ +55 C
	Storage temperature	-20 C ~ +70 C
	Relative	< 95%
	Dimensions (H x W x T)	W:247mm D:127mm H: 267mm
	Weigh	2.7kg

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Cable Fault Locator

Advanced Waveform Cable Fault Locator

mTDR-070

Features

- Suitable for use on Coaxial, Telephone, CATV, CCTV, Power cable & UTP cable etc.
- Maximum range : Coax : 3.2m~20,000m (10.4ft~65,000ft)
  *Maximum testable cable length will vary with pulse width and cable type
- Two active cursors with individual control
- Changeable zero point
- Ease of use : single key functions
- Maximum waveform storage up to 100
- Usable battery time display
- 77 propagation memory storages assist fast & easy selection of VOP
- Waveform zoom capabilities
- Waveform trace and diagnosis
- Automatic event search
- Low power consumption
- Efficient power management
- Windows S/W : NanoWave?
- Rugged and waterproof packing
- Optional spare battery double operating time
- CE & FCC certified

Model

Part #	Description
mTDR-070	non

Description

Introduction

NanoTronix advanced Waveform Cable Fault Locator (Model No.: mTDR- 070) is highly accurate hand-held measuring instrument based on TDR (Time Domain Reflectometry) technology, which measures or tests a variety of cable conditions to, from a remote distance, determine a wide range of cable problems, fault status (complete open & short, partial open & short, loading coils, loose connection, broken lines etc..) and the type of equipment installed along the line, providing critical information for the line installation, maintenance & repair crew.

The instrument automatically analyzes the physical characteristics, including faulty conditions like complete open & short, partial open & short, loading coils, loose connection, broken lines and faulty impedance etc.. of the metal conductor and displays the measurement/test results in the graphic and tabular forms through a graphic LCD screen with 320x240 pixel resolution.

NanoTronix advanced Waveform TDR can effectively be utilized in a variety of the cable environments wherever any cables consisting of at least two insulated conductors, such as telephone lines, high-speed communication lines, CATV lines, power distribution lines, UTP cables (CAT 3, 4, 5, 5e & 6) etc..

By providing separate keys for some frequently used functions and incorporating intuitive easy-to-use menu for other functions, users can handle it without much difficulty. With large internal memory and a serial communication port, users can store up to 100 waveforms in the instrument and download them to the PC for analyzing the waveforms with the specially developed PC software (NanoWave™).

With high accuracy as well as user-friendly features, NanoTronix Advanced Waveform Cable Fault Locator is an excellent instrument for cable installation, maintenance & repair crew.

Applications

NanoTronix Advanced Waveform TDR (Model No.: mTDR-070) has been using in many industrial sites such as Telephone company, ISP, CATV company, HFC network maintenance company, LAN installer or maintenance company, Power plant company, Chemical company, Ship-builder, Military communication unit, Large-sized factory and Subway station wherever any kinds of metallic cables are installed and need to be maintained.
Coax. cable network maintenance

- CATV network maintenance
- Electric power cable maintenance
- Telephony network maintenance
- Security cable maintenance
- LAN network maintenance

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Cable Fault Locator

Advanced Waveform Cable Fault Locator

Specifications		
Performance	Measurement range	Coax. : 3.2m ~ 20,000m (10.4ft ~ 65,000ft) for Coaxial cables
	*Maximum testable cable length will vary with pulse width and cable type	
	Maximum display resolution	10cm(variable up to 50m)
	Accuracy	0.1m ±0.1% of reading for Coax. cables
	*Accuracy will vary with VOP of cable being tested	
	Test mode	L1, L1&M, L1-M, M
	Pulse width	5, 15, 45, 100, 200, 500,1000,2000,5000,10000μS
Interface	Display	320x240 pixel back-lit LCD
	Maximum storage capacity	100 waveforms
	Internal Memory	256Kbyte
	Communication port	RS-232C compatible (1 start bit, 8 data bits, 1 stop bit and no parity and 38,40 baud rate)
	Output impedance	Automatic output impedence control of 25,50,75,100,125 & 150Ω
	Input bandwidth e	300MHz
	Effective sampling rate	1GS/s
	Gain	O to 66dB or better, maximum sensitivity 1mV (full scale)
	Screen update rate	Maximum 3 times per second
	VOP(PVF)	Variable from30.0 to 99.9%(in 0.1% steps) to 99.9%(in 0.1% steps) V/2 : 45 to 150m/us
Operation	Battery	12V Nickel-Metal Hydride Battery(4000 mAh)
	Adaptor	DC 12~14V / 1A Adaptor
	Input protection	250V AC 60Hz
	Connector	BNC Female
	Operating time	6 hours
	Recharge time	4 hours
Dimension	Width	247mm(9.7")
	Depth	127mm(5")
	Height	267mm(10.5")
	Net Weight	3.3*(7.2lbs)
Environment	Operating temperature	-15˚C (+5˚F) ~ +55˚C (131˚F)
	Storage temperature	-20 ˚C ('-4˚F) ~ +70˚C (158˚F)
	Humidity	< 95%

Standard Accessories

- 8m /75Ω coaxial cable
- 2m long Alligator clip
- RS-232C serial communication cable
- DC 12~14V / 2A adaptor
- BNC to F connector
- BNC to BNC connector
- Soft carrying bag
- Shoulder strap
- NanoWave™ installation CD
- User's manual

Optional Accessory

- External spare battery
- Male BNC to female RJ45 adaptor
- 12V Cigarette lighter charger

Warranty

- 1 year from the date of purchase

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Lan Cable Tester

Hand-held TDR (Time Domain Reflectometer

mTDR-070

Features

- Low cost numeric cable length meter (TDR) + LAN Cable Tester
- High resolution and high accuracy
  - Resolution : 5m (2in)
  - Accuracy : ±1% of reading +10cm (4in)
- LAN cable fault detection for open, shorted, crossed, split and reversed pair
- Overload Voltage protection : displays "OUCH" alert message with sound when line voltage exceeds 6.5V
- Internal VOP library for 39 standard cable types
- Built-in tone generator for cable tracing & identification (oscillating 910 to 1100 Hz with 5V peak to peak)
- 20 additional library memory spaces for new VOP settings
- Automatic VOP calculation
- Free standalone inductive probe
- Extra-large backlit (icon type 7 segment) LCD
- Includes 1 remote identifier for wiremapping
- Safety protection (up to 250V RMS)
- FCC & CE certified

Model

Part #	Description
mTDR-020	non

Description

Introduction

NanoTronix LAN Cable Tester (Model No.: mTDR-020) is a pocket-sized and easy-to-use LAN cable tester which is the ideal instrument for those managing LAN and metallic telecom cable networks with lowest cost. Nanotronix LAN Cable Tester provides easy-to-use accurate measurement for locating faults and measuring the length of any type of paired (shielded or twisted) metallic cables such as category 5/6 UTP cables, Telephone and Coaxial cables.

Together with the fault or length measurement, NanoTronix LAN Cable Tester pinpoints ill-pairings of LAN cables: open, short, reversed, crossed and split pairs. It also offers the Office Identifier which allows users to find the termination of office cable drops in wiring closets (optional Office Identifier plugs required). This feature provides a favorable environment for office network installation with hubs. Tone Generating function and included free inductive probe allows users to verify cable's continuity and trace the cable in walls, floors and ceilings.

Rugged and affordable NanoTronix LAN Cable Tester is the ideal tool for onthe- spot cable testing. It is the all-in-one tester which meets the needs of every cable contractors, installers and technicians at lowest cost.

NanoTronix LAN Cable Tester is housed in a rugged ABS enclosure which is dust and weatherproof to IP 42. The instrument also comes with a soft carrying case and alligator clip adapter. It is powered by four AA (NEDA 15A or LR6) batteries, which are stored in a compartment on its back.

Applications

- UTP cable (CAT 3/4/5/5e/6)
- Telephone line and coaxial cable
- Any paired (shield or twisted) metallic Telecom cable

NanoTronix LAN Cable Tester (Model No.: mTDR-020) is primarily designed for LAN installer, cable wholesalers, retailers, contractors, electricians, cable installers and alarm installers who need to troubleshoot and measure individual line faults (open and short), pairings, and their distances.

Automatic VOP calculation

NanoTronix LAN Cable Tester (Model No.: mTDR-020) presents automatic VOP calculation allowing efficient measurement for all types of cables - providing auto calculation of VOP of a sample cable: a sample of 10 meters (30 feet) enables even inexperienced technicians to set up and conduct standardized tests to get perfect results every time.

Additional 20 memory spaces are available for storing new VOPsettings, which let technicians to conveniently save the VOPvalues of frequently worked cables for future usage.

Nonvolatile memory

Internal VOP library : 39 standard cable types
Additional library : 20 additional library memory spaces for new VOP settings

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Lan Cable Tester

Hand-held TDR (Time Domain Reflectometer

NANOTRONIX

Specifications		
Performance	Measurable Cable	UTP Cable (CAT 3, 4, 5, 5e & CAT 6), Coaxial and Telephone cable
	Measurement range	600m (2,000ft)
	Maximum display resolution	5cm (2in)
	Accuracy	±1% of reading + 10cm (4in)
	Automatic power off	30minutes with no key touched
	Automatic output impedance	25, 50, 75, 100, 125 or 150Ω
Interface	User interface	Extra-large backlit (ICON type 7 segment) LCD
	Internal library	39 standard cable types
	Additional library	20 additional ibrary memory spaces for new V.O.P settings
	VOP	Adjustable from 1.0% to 99.9% (in 0.1% step)
Power Supply	Battery	4AA (LR6)
	Battery life	Approx 5,000 tests
Safety	EMC	BS/EN 61326-1
	Connector type	BNC & RJ45
	Safety	Complies with IEC 61010-1
Dimension	Width	235mm (9.2")
	Depth	44mm (1.7")
	Height	100mm (3.9")
	Net Weight	486g (17oz)
Environment	Operating temperature	-18˚C (0˚F) ~ +60˚C (140˚F)
	Storage temperature	-20 ˚C (4˚F) ~ +70˚C (158˚F)
	Humidity	80% AT 35˚C (95˚F)

Standard Accessories

① Soft carrying case
② Alligator clip
③ Inductive probe for tone generator
④ RJ45 to RJ45 female coupler
⑤ RJ45 to RJ45 patch cable
⑥ Female RJ45 to female BNC
(Remote identifier #1 only)
⑦ Male BNC to female RJ45 adaptor
⑧ User's manual
*A battery pack is built into the instrument

Optional Accessory

Female RJ45 to female BNC

- Remote Identifier #2
- Remote Identifier #3
- IRemote Identifier #4

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Combi TDR for optic & Metalic cables

DT-Combined Optical / Metalic Time Domain Reflectometer (TDR)

OMTDR-1000

Model

Part#	Description
OMTDR-1000	non

Description

Introduction

NanoTronix Combi TDR (Model No.: OMTDR-1000) is a compact and lightweight handheld Optical Time Domain Reflectometer (OTDR) with Metallic Time Domain Reflectometer (MTDR) integrated in one unit to be used for either optic fiber or metallic cable network.

The OTDR mode can be used for analyzing the physical condition of optical fibers in the installation and maintenance of optical communication networks. It provides users with the complete information on the attenuation and reflective or non-reflective loss of optical fibers so as to locate faults, connectors and splices along the fibers.

The MTDR mode is suitable for installation, maintenance and faultfinding (complete open & short, partial open & short, loading coils, loose connection, broken lines etc.) of metallic cables such as CATV, CCTV, Coaxial cables, Power cable, Telephone line and UTP cable whatever consists of at least two conductors.

NanoTronix Combi TDR (Model No.: OMTDR-1000) will provide network installers and maintenance personnel with a complete solution for testing, troubleshooting, certifying and documenting the mixed network (especially LAN, CATV, HFC and FTTx networks) in any industrial sites..

Applications

NanoTronix Combi TDR (Model No.: OMTDR-1000) can be applicable for both optic and metallic cable by interchanging of OTDR mode or MTDR mode

- OTDR mode Optical cables : FTTx and HFC
  - Fiber-to-the-Curb(FTTC)
  - Fiber-to-the-Home(FTTH)
  - Fiber-to-the-Premises(FTTP)
  - Fiber-to-the-Office(FTTO)

- MTDR mode Metallic cables
  - Coaxial cable
  - Telephone cable
  - UTP cable
  - Electric power cable

Features

- mini OTDR + MTDR
- 1310/1550nm
- One button scan
- 6.4" TFT Color LCD display
- Easy-to-use, light-weight and compact
- PC software for further analyzing, reporting and printing
- Rugged and waterproof packing
- Optional spare battery for doubling operating time
- Extremely economical multi purpose TDR for both optic cables and metallic cables.

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Combi TDR for optic & Metalic cables

DT-Combined Optical / Metalic Time Domain Reflectometer (TDR)

Specifications		
Optitical specificicatitions (OTDR mode)(OTDR mode)	Dynamic range	20dB
	Wavelength	1310/1550nm
	Fiber type	Single-mode
	Connector type	FC/PC or SC/PC
	Minimum display resolution	10cm
	Max. measurement range	100km
	Pulse width	50ns, 100ns, 200ns, 500ns, 1μs, 2μs, 5μs, 10μs
	Average time	15s, 30s, 1min, 2min, 3min
	Attenuation deadzone	30m
	Event deadzone	15m
	Distance accuracy	10cm±0.1% of reading < 100m ±0.1% of reading >100m
	Reflection detect accuracy	±4dB
	Attenuation detect accuracy	±0.1dB
	Measurement data storage	50 curves
	IOR setting	1.0000 ~ 1.9999 (in 0.0001 step)
MetallicMetallic specificicatitions (MTDR mode) (MTDR mode)	Measurement range	Coax. : 3.2m ~ 20,000m (10.4ft ~ 65,000ft)
	*Maximum testable cable length will vary with pulse width and cable type	
	Maximum display resolution	10cm (Variable up to 50m)
	Accuracy	0.1m±0.01% of reading for Coax.
	*Accuracy will vary with VOP of cable being tested	
	Test mode	L1, L1&M, L1-M, M
	Pulse width	5ns, 15ns, 45ns, 100ns, 200ns, 500ns, 1μs , 2μs, 5μs, 10μs
	Maximum storage capacity	100 waveforms
	Output impedance	Automatic output impedance control of 25, 50, 75, 100, 125, 150Ω
	Input bandwidth	300MHz
	Effective sampling rate	1GS/s
	Gain	0 to 66dB or better, maximum sensitivity 1mV (full scale)
	Screen update rate	Maximum 3 times per second
	VOP (PVF)	Variable from 30.0 to 99.9% (in 0.1% step) V:90 to 300m/μs V/2:45 to 150m/μs
	Connector	BNC female
General specificationsGeneral specifications	Display type	6.4" Color TFT LCD
	Internal memory	2MB
	Communication port	RS-232C compatible (1 start bit, 8 data bits,1 stop bit and no parity and 38, 400 baud rate)
	Power supply	7.6V Li-ion chargeable battery pack 8800mAh / AC adapter
	Battery life	7 hours (extendable up to 14 hours by using extra spare battery)
	Recharge time	6 hours
	Adaptor input	Voltage : AC 110 ~ 240V (auto adjusting) Frequency : 50/60Hz (auto adjusting)
	Adaptor output	Voltage : DC 14V (+5%) Currency : Max.1A
	Operating temperature	-15˚C~ +50˚C
	Storage temperature	-20˚C ~ +70˚C
	Relative humidity	< 95%
	Weight	2.7kg
	Dimensions (H x W x T)	247mm(9.7") x 267mm(10.5") x 127mm(5")

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Cable Fault Locator

Hand-held TDR (Time Domain Reflectometer)

mTDR-010

Features

- Low cost numeric cable length meter /TDR Cable Fault Locator
- Full autoranging for measuring the length of cables
- High resolution and high accuracy
  -Resolution : 50cm (20in)
  -Accuracy
  Up to 100m : ±2% of reading + 50cm (20in)
  Over 100m : ±2% of reading
- Extra-large backlit (icon type 7 segment) LCD
- Overload voltage detection : displays "OUCH" alert message with sound when line voltage exceeds 6.5V
- Internal VOP library for 39 standard cable types
- 20 additional library memory spaces for new V.O.P settings
- Automatic output impedance control of 25Ω, 50Ω, 75Ω, 100Ω, 125Ω or 150Ω
- Safety protection (up to 250V RMS)
- FCC & CE Certified

Model

Part #	Description
mTDR-010	non

Description

Introduction

NanoTronix Numeric Cable Fault Locator (Model No.: mTDR-010) is the most suitable and low-price instrument for locating a fault such as open and short position in metallic telecom cables. It is unique in its class which utilizes TDR (Time-Domain Reflectometry) technology giving users accurate information of the faults based on a specific cables' VOP (Velocity Of Propagation).

The instrument is applicable for any cable consisting of at least paired (shielded or twisted) metallic conductors, such as coaxial cables and telephone cables, at low cost. It has an automatic internal impedance matching network to allow testing of 25Ω, 50Ω, 75Ω, 100Ω, 125Ω and 150Ω cables.

The Numeric Cable Fault Locator is housed in a rugged ABS enclosure which is dust and weatherproof to IP 42. The instrument also comes with a soft carrying case and alligator clip adapter. It is powered by four AA (NEDA 15A or LR6) batteries, which are stored in a compartment on its back.

Applications

NanoTronix Numeric Cable Fault Locator (Model No.: mTDR-010) is primarily designed for cable wholesalers, retailers, contractors, electricians, cable installers, linemen and construction personnel who need to measure cable length and distance to a fault (open and short) of coaxial cables, telephone cables and any type paired (shielded or twisted) metallic cables.

Automatic VOP calculation

NanoTronix Numeric Cable Fault Locator (Model No.: mTDR-010) presents automatic VOP calculation allowing efficient measurement for all types of cables - providing auto calculation of VOP of a sample cable: a sample of 10 meters (30 feet) enables even inexperienced technicians to set up and conduct standardized tests to get perfect results every time. Additional 20 memory spaces are available for storing new VOP settings, which let technicians to conveniently save the VOP values of frequently worked cables for future usage.

Nonvolatile memory

Internal VOP library : 39 standard cable types
Additional library : 20 additional library memory spaces for new VOP settings

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Cable Fault Locator

Hand-held TDR (Time Domain Reflectometer)

Specifications		
Performance	Measurable Cable	3,000m (10,000ft) for Coax. Cable
	Measurement range	50cm (20in)
	Minimum display resolution	Up to 100m : ±2% of reading + 50 cm (20in)
	Accuracy	Over 100m : ±2% of reading
	Automatic power off	30minutes with no key touched
	Automatic output impedance	25, 50, 75, 100, 125 or 150Ω
	User interface	Extra-large backlit (ICON type 7 segment) LCD
Interface	Internal library	39 standard cable types
	Additional library	20 additional library memory spaces for new VOP settings
	VOP	Adjustable from 1.0% to 99.9% (in 0.1% step)
Power Supply	Battery	4AA Batteries (NEDA or LR6)
	Battery life	5,000 tests
Safety	EMC	BS/EN 61326-1
	Connector type	BNC & RJ45
	Safety	Complies with IEC 61010-1
Dimension	Width	235mm (9.2")
	Depth	44mm (1.7")
	Height	100mm (3.9")
	Net Weight	486g (17oz)
Environment	Operating temperature	-18˚C (0˚F) ~ +60˚C (140˚F)
	Storage temperature	-20 ˚C (4˚F) ~ +70˚C (158˚F)
	Humidity	80% AT 35˚C (95˚F)

Standard Accessories

① Soft carrying case

② Alligator clip

③ User's manual

*A battery pack is built into the instrument

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO100

Features

- Lightweight - only 7kg
- Powerful 5A - 100A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO100	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO100 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO100 generates true DC current with automatically regulated test ramps. During the test RMO100 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO100 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO100 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO100 at 230V or 115V Mains Supply.

Supply Voltage	Output Current	Full Load Voltage
230V AC	100A DC smoothed	8,0V DC
115V AC	100A DC smoothed	8,0V DC

Output current is filtered and has a ripple of less then 1%. The RMO100 current output is 100A continuously.

CONT Mode

RMO100 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω-button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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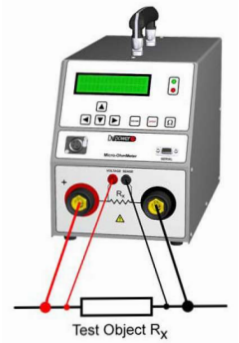
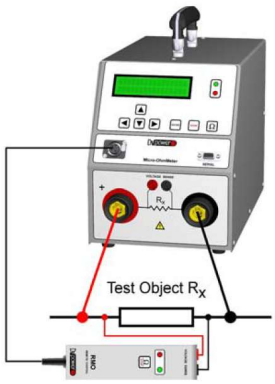
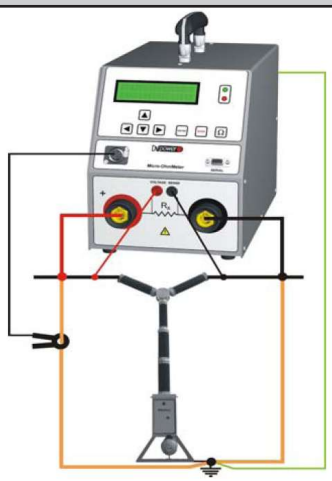
Connecting a Test Object to RMO100	Remote Control Unit	Connecting a Test Object to RMO100
		
Remote Control Unit Current clamp meter With RMO100 turned off, connect RMO100 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO100 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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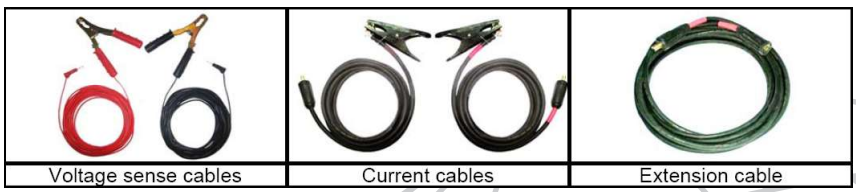
Micro OhmMeter

High DC current reslstance meter

Specifications		
	Technical data	
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz
Output data	Test current Current duration Measuring range / Resolution Typical accuracy	5A - 100A DC 100A continuously 0,1μΩ - 999,9μΩ 0,1μΩ 1,000mΩ - 9,999mΩ 1μΩ 10,00mΩ - 99,99mΩ 10μΩ 100,0mΩ - 999,9mΩ 0,1mΩ ± (0,25% rdg + 0,25% FS)
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 7kg/15,4lb IP54
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2
	Specifications are subject to change without notice.	

Standard Accessories

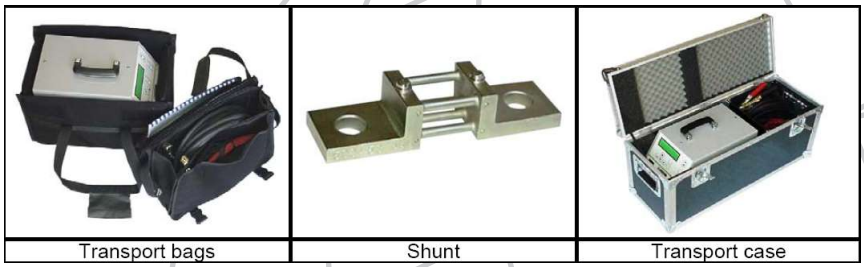
- Current cables 2x5m 16mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags



Voltage sense cables | Current cables | Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 16mm^2
- Current cables 2x15m 25mm^2
- Extension cable 1x10m 25mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2



Transport bags | Shunt | Transport case

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO200

Features

- Lightweight - only 7kg
- Powerful 5A - 200A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO200	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO200 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO200 generates true DC current with automatically regulated test ramps. During the test RMO200 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO200 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO200 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO200 at 230V or 115V Mains Supply.

Supply Voltage	Output Current	Full Load Voltage
230V AC	200A DC smoothed	7,4V DC
	100A DC smoothed	8,0V DC
115V AC	200A DC smoothed	7,0V DC
	100A DC smoothed	8,0V DC

Output current is filtered and has a ripple of less then 1%. The RMO200 current output is rated at 200A for 5 minutes, and 100A continuously.

CONT Mode

RMO200 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω -button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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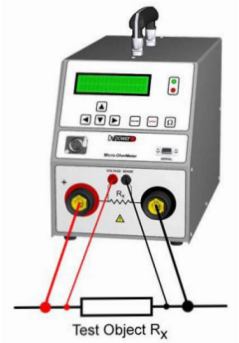
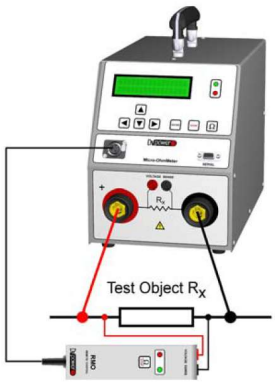
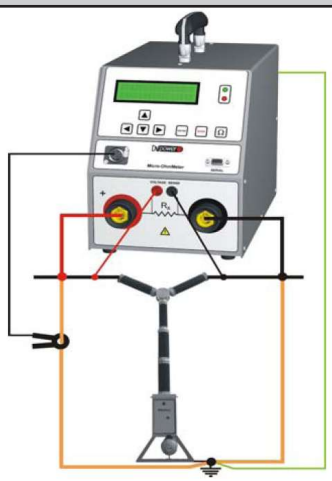
Connecting a Test Object to RMO200	Remote Control Unit	Current clamp meter
		
With RMO200 turned off, connect RMO200 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO200 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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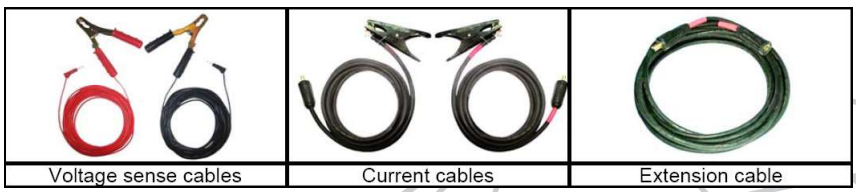
Micro OhmMeter

High DC current reslstance meter

Specifications		
	Technical data	
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz
Output data	Test current Current duration Measuring range / Resolution Typical accuracy	5A - 200A DC 200A for 5 minutes, 100A continuously 0,1μΩ - 999,9μΩ 0,1μΩ 1,000mΩ - 9,999mΩ 1μΩ 10,00mΩ - 99,99mΩ 10μΩ 100,0mΩ - 999,9mΩ 0,1mΩ ± (0,25% rdg + 0,25% FS)
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 7kg/15,4lb IP54
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity Specifications are subject to change without notice.	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2

Standard Accessories

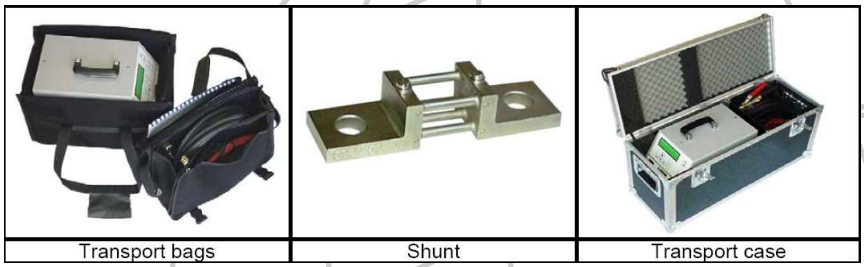
- Current cables 2x5m 16mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags



Voltage sense cables | Current cables | Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 16mm^2
- Current cables 2x15m 25mm^2
- Extension cable 1x10m 25mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2



Transport bags | Shunt | Transport case

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO300

Features

- Lightweight - only 7kg
- Powerful 5A - 300A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO300	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO300 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO300 generates true DC current with automatically regulated test ramps. During the test RMO300 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO300 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO300 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO300 at 230V or 115V Mains Supply. A reduced output is available from lower supply voltages.

Supply Voltage	Output Current	Full Load Voltage
230V AC	300A DC smoothed	5,8V DC
	200A DC smoothed	6,0V DC
115V AC	300A DC smoothed	5,0V DC
	200A DC smoothed	6,0V DC

Output current is filtered and has a ripple of less then 1%.

CONT Mode

RMO300 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω -button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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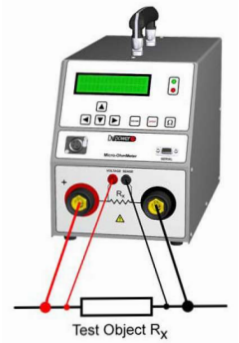
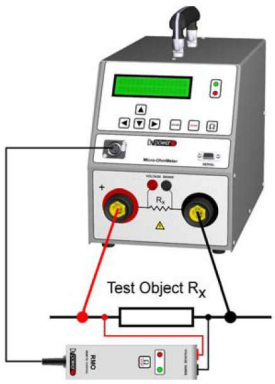
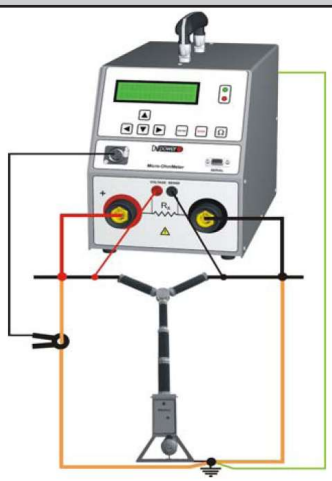
Connecting a Test Object to RMO300	Remote Control Unit	Current clamp meter
		
With RMO300 turned off, connect RMO300 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO300 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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E-mail: info@wardsonlimited.com

Micro OhmMeter

High DC current reslstance meter

Specifications		
	Technical data	
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz
Output data	Test current Measuring range / Resolution Typical accuracy	5A - 200A DC 0,1μΩ - 999,9μΩ 0,1μΩ 1,000mΩ - 9,999mΩ 1μΩ 10,00mΩ - 99,99mΩ 10μΩ 100,0mΩ - 999,9mΩ 0,1mΩ ± (0,25% rdg + 0,25% FS)
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 7kg/15,4lb IP54
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2
	Specifications are subject to change without notice.	

Standard Accessories

- Current cables 2x5m 25mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags

Voltage sense cables

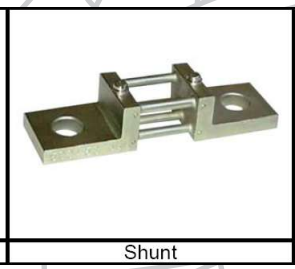
Current cables

Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 25mm^2
- Current cables 2x15m 35mm^2
- Extension cable 1x10m 35mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2

Transport bags


Shunt

Transport case

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO400

Features

- Lightweight - only 7kg
- Powerful 5A - 400A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO400	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO400 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO400 generates true DC current with automatically regulated test ramps. During the test RMO400 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO400 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO400 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO400 at 230V or 115V Mains Supply. A reduced output is available from lower supply voltages.

Supply Voltage	Output Current	Full Load Voltage
230V AC	400A DC smoothed	5,6V DC
	200A DC smoothed	6,0V DC
115V AC	400A DC smoothed	4,0V DC
	200A DC smoothed	6,0V DC

Output current is filtered and has a ripple of less then 1%. The RMO400 current output is rated 400A for 1 minute, at 300A for 2 minutes and 200A continuously at 25˚C ambient.

CONT Mode

RMO400 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω-button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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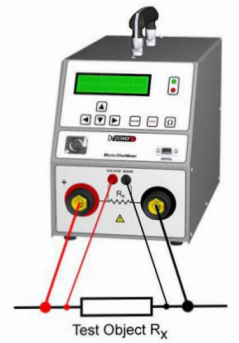
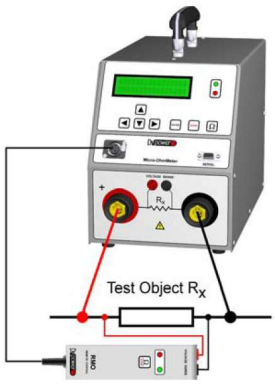
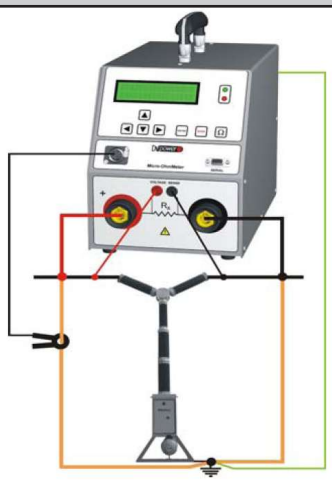
Connecting a Test Object to RMO400	Remote Control Unit	Current clamp meter
		
With RMO300 turned off, connect RMO400 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO400 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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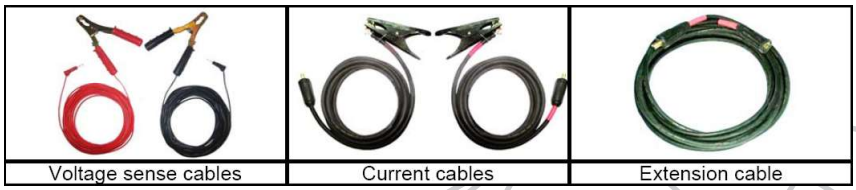
Micro OhmMeter

High DC current reslstance meter

Specifications			
	Technical data		
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz	
Output data	Test current Measuring range / Resolution Typical accuracy	5A - 400A DC 0,1μΩ - 999,9μΩ 1,000mΩ - 9,999mΩ 10,00mΩ - 99,99mΩ 100,0mΩ - 999,9mΩ ± (0,25% rdg + 0,25% FS)	 0,1μΩ 1μΩ 10μΩ 0,1mΩ
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing	
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 7,5kg/16,5lb IP54	
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92	
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2	
	Specifications are subject to change without notice.		

Standard Accessories

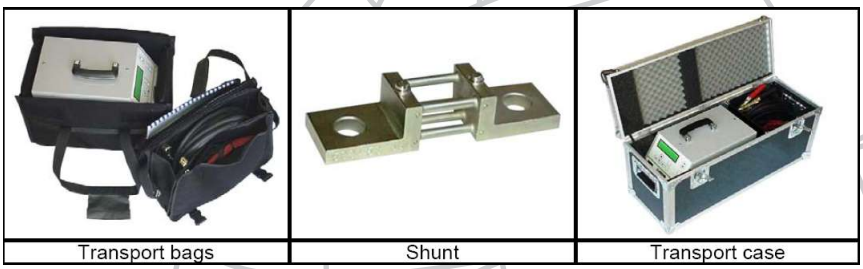
- Current cables 2x5m 25mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags



Voltage sense cables | Current cables | Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 35mm^2
- Current cables 2x15m 50mm^2
- Extension cable 1x10m 505mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2



Transport bags | Shunt | Transport case

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO500

Features

- Lightweight - only 8kg
- Powerful 5A - 500A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO500	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO500 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO500 generates true DC current with automatically regulated test ramps. During the test RMO500 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO500 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO500 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO500 at 230V or 115V Mains Supply. A reduced output is available from lower supply voltages.

Supply Voltage	Output Current	Full Load Voltage
230V AC	500A DC smoothed	5,0V DC
	300A DC smoothed	5,6V DC
115V AC	500A DC smoothed	3,0V DC
	300A DC smoothed	5,0V DC

Output current is filtered and has a ripple of less then 1%. The RMO500 current output is rated 500A for 1 minute, at 300A for 2 minutes and 200A continuously at 25˚C ambient.

CONT Mode

RMO500 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω-button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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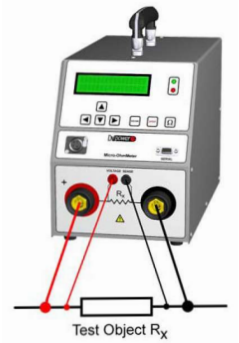
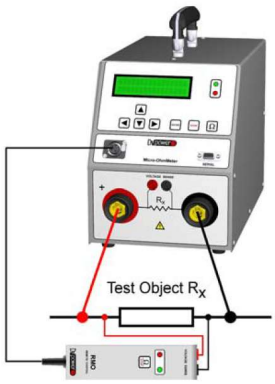
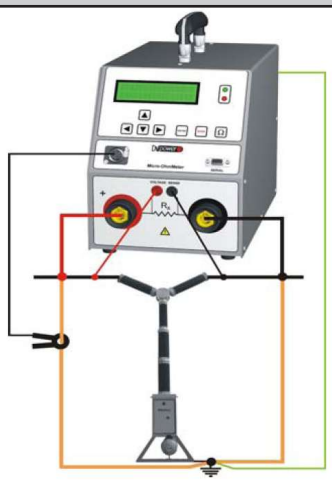
Connecting a Test Object to RMO500	Remote Control Unit	Current clamp meter
		
With RMO500 turned off, connect RMO500 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO500 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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Micro OhmMeter

High DC current reslstance meter

Specifications		
	Technical data	
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz
Output data	Test current Measuring range / Resolution Typical accuracy	5A - 500A DC 0,1μΩ - 999,9μΩ 0,1μΩ 1,000mΩ - 9,999mΩ 1μΩ 10,00mΩ - 99,99mΩ 10μΩ 100,0mΩ - 999,9mΩ 0,1mΩ ± (0,25% rdg + 0,25% FS)
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 8kg/17,5lb IP54
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2
	Specifications are subject to change without notice.	

Standard Accessories

- Current cables 2x5m 25mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags

Voltage sense cables

Current cables

Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 50mm^2
- Current cables 2x15m 70mm^2
- Extension cable 1x10m 70mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2

Transport bags

Shunt

Transport case

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Micro OhmMeter

High DC current reslstance meter

Micro OhmMeter
RMO600

Features

- Lightweight - only 8kg
- Powerful 5A - 600A DC
- Measuring range 0 - 999,9mΩ
- Resolution to 0,1μΩ
- SINGLE / CONT Mode
- Mechanical protection IP54

Model

Part #	Description
RMO600	non

Description

Applications

Typical application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints.

Description

RMO600 is a micro-ohmmeter based on state of the art technology, using the most advanced switch mode technique available today. RMO600 generates true DC current with automatically regulated test ramps. During the test RMO600 ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the Ω-button.

The RMO600 instrument can store up to 500 measurements. All measurements are time and date stamped. Using RMOWin-V2 software a test can be performed from a PC, and the results can be obtained directly at a PC. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO600 has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

Output Ratings

The full output is available from the RMO600 at 230V or 115V Mains Supply. A reduced output is available from lower supply voltages.

Supply Voltage	Output Current	Full Load Voltage
230V AC	600A DC smoothed	5,0V DC
	300A DC smoothed	6,0V DC
115V AC	600A DC smoothed	3,0V DC
	300A DC smoothed	5,0V DC

Output current is filtered and has a ripple of less then 1%. The RMO600 current output is rated 600A for 1 minute, at 300A for 2 minutes and 200A continuously at 25˚C ambient.

CONT Mode

RMO600 can generate DC current continuously using the CONT menu. In this menu the current can be chosen the same way like in the SINGLE menu, but the duration of the test can be preset.

The test is started pressing the Ω-button. During the test, a new result is shown on the display and stored into the PC (RMOWin-V2) each second. Using RMOWin-V2 the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

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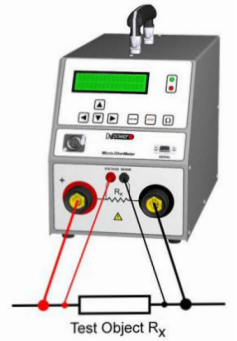
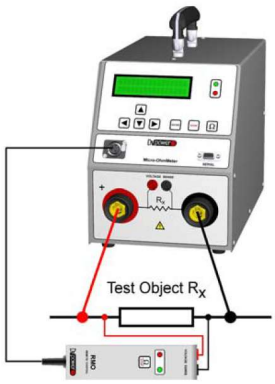
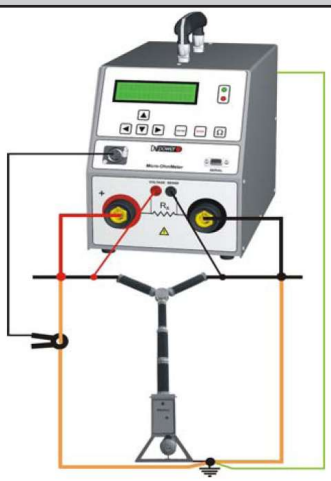
E-mail: info@wardsonlimited.com

Connecting a Test Object to RMO600	Remote Control Unit	Current clamp meter
		
With RMO600 turned off, connect RMO600 to the test object (R_X) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to R_X, and in between the current feeding cables. That way, resistance of both cables and clamps is almost completely excluded from the resistance measurement.	The RMO Remote Control Unit is an optional control unit that is used to start and stop the tests from a remote location, away from the actual RMO. Provided that, for a series of tests, the same test current is fed through the test object, multiple measurements can be carried out with the RMO Remote Control Unit.	Using RMO600 with current clamp meter it is possible to make safer measurement of breakers with both sides of the breaker grounded. Measuring the current through the ground connection and reducing this value from the total current is an additional safety feature.

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Micro OhmMeter

High DC current reslstance meter

Specifications			
	Technical data		
Mains Power Supply	Connection Mains supply	according to IEC/EN60320-1; UL498, CSA 22.2 from 90V to 264V AC; 50-60Hz	
Output data	Test current Measuring range / Resolution Typical accuracy	5A - 600A DC 0,1μΩ - 999,9μΩ 1,000mΩ - 9,999mΩ 10,00mΩ - 99,99mΩ 100,0mΩ - 999,9mΩ ± (0,25% rdg + 0,25% FS)	 0,1μΩ 1μΩ 10μΩ 0,1mΩ
Environment conditions	Operating temperature Storage and transportation Humidity	-10˚C - +50˚C / 14˚F - +122˚F -25˚C - +70˚C / -13˚F - +158˚F 5% - 95% relative humidity, non condensing	
Dimensions and Weight	Dimensions Weight Mechanical protection	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle 8kg/17,5lb IP54	
Safety Standards	European standards International standards	EN 61010-1 IEC 61010-1 UL 3111-1 CAN/CSA-C22.2 No 1010.1-92	
Electromagnetic Compatibility (EMC)	CE conformity Emission Interference Immunity	EMC standard 89/336/EEC EN 50081-2, EN 61000-3-2/3 EN 50082-2	
	Specifications are subject to change without notice.		

Standard Accessories

- Current cables 2x5m 25mm^2 with battery clips
- Sense cables 2x5m 2,5mm^2 with alligator clips
- RMOWin-V2 PC software including RS232 cable
- Mains power cable
- Ground (PE) cable
- Transport bags

Voltage sense cables

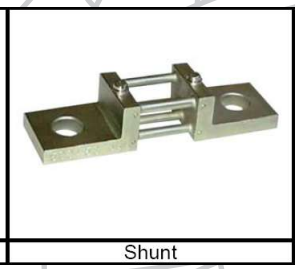
Current cables

Extension cable

Optional Accessories

- Built-in thermal printer
- Remote control unit
- Current clamp meter
- Transport case
- Test shunt 600A/60mV
- Current cables 2x10m 50mm^2
- Current cables 2x15m 70mm^2
- Extension cable 1x10m 70mm^2
- Sense cables 2x10m 2,5mm^2 with alligator clips
- Sense cables 2x15m 2,5mm^2 with alligator clips
- Sense cables, extension 2x10m 2,5mm^2

Transport bags


Shunt

Transport case

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Winding OhmMeter

High DC current reslstance meter for Transformers/motors

Winding OhmMeter
RMO10T

Features

- Lightweight - only 7,5kg
- Test current 5mA - 10A DC
- Measuring range 0,1μΩ - 2kΩ
- Two voltage sense channels
- Extremely quick measurement
- Automatic discharge circuit

Model

Part #	Description
RMO10T	non

Description

Typical application

Typical application of RMO10T is measuring the resistance of:

- Power transformers
- On-Load Tap Changers
- Generators and electrical motors
- High-current busbar joints
- Cable splices

Description

he ohmmeter RMO10T is designed for resistance measurement of inductive test objects. RMO10T generates true, filtered DC current. Both injection of current and discharge of energy from the inductance are automatically regulated.

RMO10T injects current with a voltage as high as 60V. This ensures that the duration of test is as short as possible, and that the desired test current is reached as soon as possible. Two independent channels enable testing of two series windings, or primary and secondary windings. There is enough memory within RMO10T instrument to store 500 measurements. All measurements are time and date stamped.

The set is equipped with thermal and overcurrent protection. The RMO10T has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing appropriate hardware and software.

On Load Tap Changers

The RMO10T can be used to measure winding resistance of individual taps of a power transformer's tap changer. It can also check whether the on-load tap changer (OLTC) switches without an interruption. The moment a tap position is changed from one tap to another, the device detects a sudden, very short drop of the current. A properly working tap changer differs from a malfunctioning one. This is obvious from an interruption during the change, and by the magnitude of the ripple. An interruption will result in much higher ripple value than a properly functioning tap changer that operates without interruption.

RMOWin-T

Using RMOWin-T software, tests could be performed from a PC, and results can be obtained directly at a PC. Utilizing RMOWin-T software, results can be arranged in an Excel spreadsheet, which can be shown later as a diagram and printed for a report.

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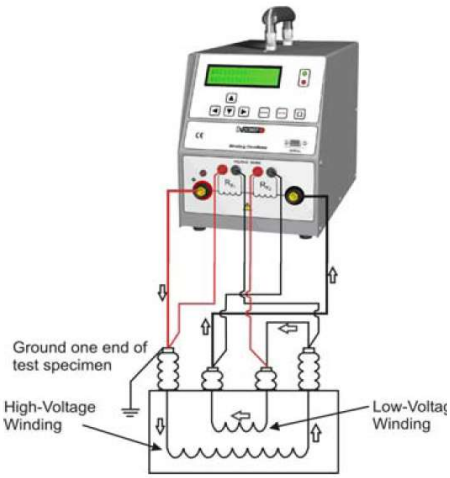
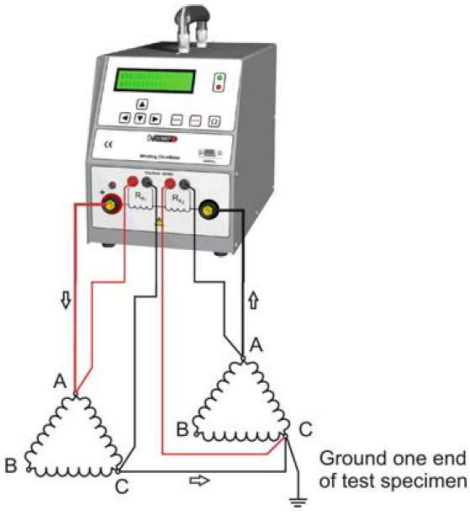
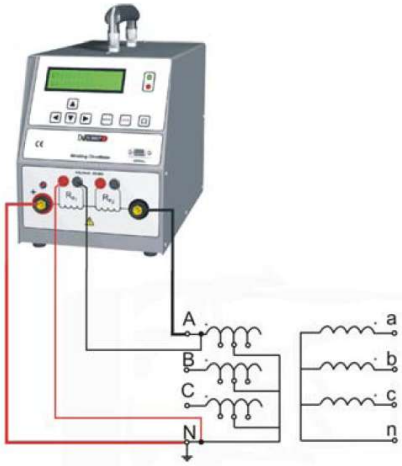
Connecting a Test Object to RMO10T



The RMO10T should be turned off, connection between RMO10T and the test object is such that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to the measured resistance, while they are connected between the current feeding cables. That way, resistance of cables and clamps is almost completely excluded from the resistance measured . The figure to the right shows simultaneous testing of both windings (high and low) on a single-phase transformer. In such a way, it is possible to speed up the measurement when two channels are used to test both windings of the transformer.



Testing of a Delta-delta winding resistance is usually a very time consuming procedure. This is because the two windings represent two closed loop inductors. When energy is brought into the inductors, this energy (in the form of D.C. current) continually circulates within each winding. To test this configuration quickly, both high and low sides should be connected in series with the current source of a Transformer Ohmmeter. By having these two windings in opposing polarity, the internal circulating currents settle very quickly to obtain a balance, and discharge with the same speed. Even if only one side of the transformer needs to be tested, connecting both high and low windings in series will speed up the test considerably.



Using RMO10T's TapChanger menu, the power transformer winding resistance of individual tap positions can be measured. Also, you can check whether the on-load tap changer switches without an interruption. The RMO10T current output injects a constant current into a power transformer. This current and voltage value is measured, and the winding resistance is calculated.

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Micro OhmMeter

High DC current reslstance meter

Specifications		
	Technical data	
Mains Power Supply	Connection	according to IEC/EN60320-1; UL498, CSA 22.2
	Voltage single phase	110V - 240V AC, +10% - −15%
	Frequency	50/60Hz
Output data	Test current	5mA DC - 10A DC
	Measuring range / Resolution	0,1μΩ - 999,9μΩ 0,1μΩ
		1,000mΩ - 9,999m Ω 1μΩ
		10,00mΩ - 99,99m Ω 10μΩ
		100,0mΩ - 999,9m Ω 0,1mΩ
		1,000Ω - 99,99Ω 10 mΩ
		100,0Ω - 999,9Ω 0,1Ω
		1000Ω - 2000Ω 1Ω
	Typical accuracy	±(0,2% rdg + 0,2% FS)
Environment conditions	Operating temperature	-10˚C - +50˚C / 14˚F - +122˚F
	Storage and transportation	-25˚C - +70˚C / -13˚F - +158˚F
	Humidity	5% - 95% relative humidity, non condensing
Dimensions and Weight	Dimensions	198 x 255 x 380mm 7,8 x 10 x 15in (W x H x D) without handle
	Weight	7,5kg/16,5lb
Safety Standards	European standards	EN 61010-1
	International standards	IEC 61010-1
Electromagnetic Compatibility (EMC)	CE conformity	EMC standard 89/336/EEC
	Emission	EN 50081-2, EN 61000-3-2/3
	Interference Immunity	EN 50082-2
	Specifications are subject to change without notice.	

Standard accessories

- RMOWin-T PC software including RS232 cable
- Current cables 2x10m 2,5mm^2
- Sense cables 2x2x10m 2,5mm^2
- Current connection cable 1x5m 6mm^2
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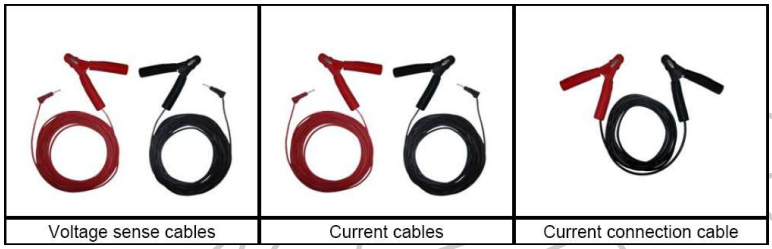
- Ground (PE) cable
- Transport case



Voltage sense cables | Current cables | Current connection cable

Optional accessories

- Built-in thermal printer
- Test shunt 50A/100mV
- Current cables 2x15m 2,5mm^2
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Transport case | Shunt | Cable bag

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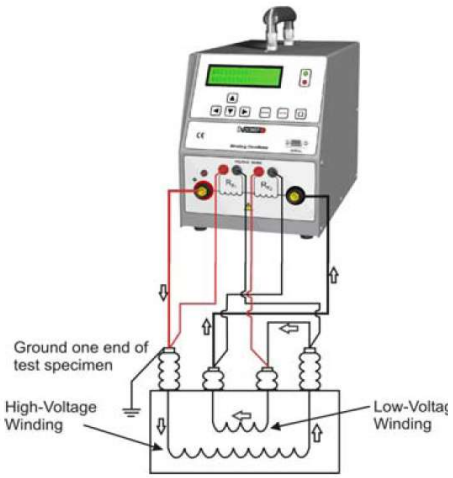

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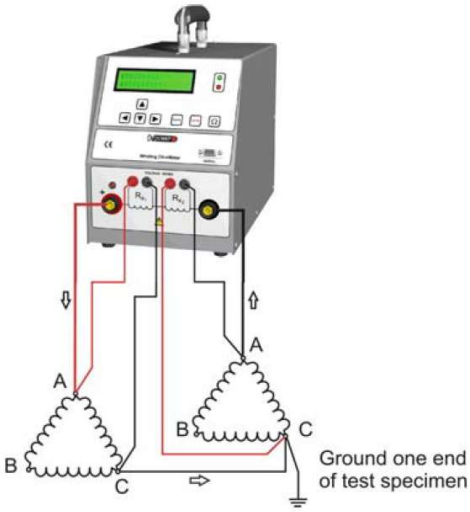

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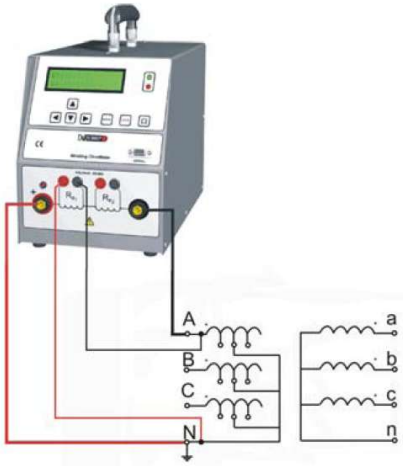

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		100,0Ω - 999,9Ω 0,1Ω
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	Typical accuracy	±(0,2% rdg + 0,2% FS)
Environment conditions	Operating temperature	-10˚C - +50˚C / 14˚F - +122˚F
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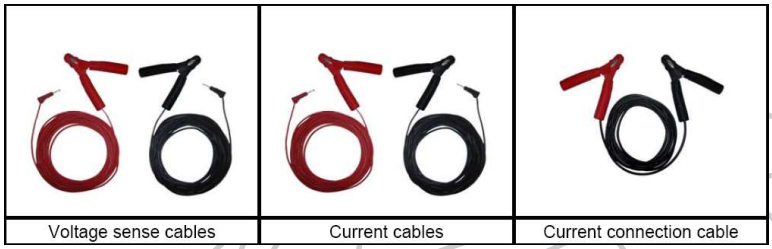

Voltage sense cables | Current cables | Current connection cable

Optional accessories

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